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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

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***EDITORIAL OFFICE:** Washington, D. C. **P.O. ADDRESS:** Box 1736, Washington 13, D. C. Telephone: REpublic 7–6278.

ADMINISTRATIVE OFFICE: American Meteorological Society, Office of Executive Secretary, 3 Joy Street, Boston 8, Mass.

* Address all business communications, orders and inquiries to the Executive Secretary, Mr. Kenneth C. Spengler, 3 Joy Street, Boston 8, Mass. Exchanges and reprints may be sent direct to P. O. Box 1736, Washington 13, D. C.

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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 6 FEBRUARY, 1955 No. 2

SPECIAL FEATURE IN THIS ISSUE

A Selective Annotated Bibliography of Textbooks and Monographs Containing Subject Bibliographies

by

MALCOLM RIGBY AND MARY L. RICE

(For complete table of contents see back cover)

Published monthly at Prince and Lemon Streets, Lancaster, Pa., by the AMERICAN METEOROLOGICAL SOCIETY, 3 Joy Street, Boston 8, Mass.

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FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to bring to the attention of meteorologists current literature in their field and in related fields and to provide bibliographic information on various subjects, as interest demands.

Part I contains abstracts of current literature in the fields of meteorology, oceanography, etc., arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of important references on a special subject. No attempt is made to prepare exhaustive bibliographies; instead, the aim is to include a representative cross section of the various aspects of a subject.

Bibliographies published in the successive issues were:

Vol. I, 1950

1. Atmos. Pollution	2. Aerobiology	3. Cloud Physics	4. Hail
5. Tornadoes	6. Volcanic Dust	7. Climat. Changes	8. Thunderstorms
9. Icing	10. Acoust. Propagation	11. Evaporation	

Vol. II, 1951

1. Extended Forecast.	2. Long Range Forecast.	3. Soil Temp.	4. Constants, etc.
5. Clim. of Near East	6. Clim. of Middle East	7. Special Winds	8. Radar Storm Detect.
9. Condensation Trails	10. Clim. of N.E. Africa	11. Mountain Met.	

Vol. III, 1952

1. Clim. of N.W. Africa	2. Carbon Dioxide	3. Clim. of Argentina, etc.	4. Dew
5. Objective Forecast.	6. Stratus Forecast.	7. Urban Climatology	8. Clim. of C. Africa
9. Visibility	10. Glaze and Rime	11. Free Air Turbulence	

Vol. IV, 1953

1. Turbulence Theory	2. Turbulent Diffusion	3. Frost	4. Clim. of Australia, etc.
5. High Level Winds	6. Winds in Stratosphere	7. Jet Stream	8. Radiation Bioclim.
9. Clim. of Pacific	10. Auroras	11. Sferics	

Vol. V, 1954

1. Oceanog. Met.	2. Clim. of S.E. Asia	3. Auroral Physics	4. Tropopause
5. Balloons	6. Numerical Forecast.	7. Radiation Data	8. Vertical Motion
9. Clim. of Arctic	10. Industrial Met.	11. Wind Waves and Swell	

Bibliographies published this year are:

1. **Bibliography of Bibliographies on Meteorology,** Vol. 6, No. 1, Jan. 1955
2. **Textbooks and Monographs Containing Subject Bibliographies,** Vol. 6, No. 2, Feb. 1955

Forthcoming bibliographies will be:

3. **Storm Surges,** Vol. 6, No. 3, March 1955
4. **Ionospheric propagation**

Other bibliographies in preparation are:

Actinometers
Arctic Synoptic Meteorology
Climate of the Arctic
Cosmic Rays in the Atmosphere
Fog Forecasting
Indoor Climatology
Microwave Propagation
Night Airglow
Ocean-Atmosphere Energy Exchange
Ozone
Singularities
Snow Cover
Synoptic Aerology
Tropical Cyclones

Part III contains a listing of the contents of those journals which are primarily meteorological. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the December issue cumulative author, subject, geographical and journal indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where the material may be found. The Union List of Serials (Gregory) is the source of most of the symbols used. In some cases, where no symbol has been assigned to a library, one will be devised according to the principles of the Union List.

Library symbols used frequently may be found in the following list:

DA:	U. S. Dept. of Agriculture Library, Washington, D. C.
DBS:	U. S. Bureau of Standards Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DN-HO:	U. S. Navy Hydrographic Office Library, Suitland, Md.
DSG:	U. S. Army Medical Library, Washington, D. C.
DSI:	Smithsonian Institution Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
GB-MO:	Great Britain, Meteorological Office Library, Harrow, England.
MH-BH:	Harvard University, Blue Hill Observatory (and American Meteorological Society) Library, Milton, Mass.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicates a good bibliography.
!	before an entry indicates a synoptic case history study accompanied by charts.

Geographic locations are in the English form rather than the form used locally, for example, Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherwise stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to the Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months are abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Number (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thus an entry will read as follows:

Meteorologische Rundschau, 2(5/6):146–151, May/June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (Vol. 2), *Heft* 5/6 (No. 5/6), *pages* 146–151, May/June 1950.

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

TEXTBOOKS

6.2–1 551.574.1:551.594.2(02)

†Bricard, Jean, **Physique des nuages.** [Cloud physics.] Paris, Presses Universitaires de France, **1953.** 343 p. 89 figs., 8 plates (photos.), bibliog. p. 329–332. "Euclide" series. **DLC**—A complete, detailed and systematic treatment of many aspects of cloud physics, from the modern point of view. The chapters comprise: 1) Classification and methods of observation; 2) Properties of air masses (stability and instability); 3) Formation of clouds in homogenous air masses; 4) Orographic and frontal clouds; 5) Clouds of water droplets; supercooled clouds; 6) Ice crystal clouds; 7) Precipitation formation; 8) Diffusion of light by clouds; 9) Transmission of radiation by clouds; 10) Electric field of clouds; 11) Clouds and electric currents in atmosphere; 12) Origin of electricity in clouds; 13) and 14) Lightning structure, spectra and photography; 15) Lightning mechanism. The book is full of illustrative schematic diagrams and theory (clearly presented), and reviews most of the recent work in this field—especially in the field of atmospheric electricity connected with clouds and thunderstorms. *Subject Headings:* **1. Cloud physics 2. Thunderstorm electricity 3. Textbooks.**—*M.R.*

6.2–2 551.5:551.46(02)

†Shuleĭkin, Vasiliĭ Vladimirovich, **Fizika moria.** [Physics of the sea.] Moscow, Akademiia Nauk SSSR, **1953.** 989 p. 615 figs. (some col., some fold.), foot-refs., numerous eqs. Fold. chart in pocket. **DLC**—Since 1941 there has been such a concerted program of investigations in physical oceanography in all maritime countries that the amount of available knowledge of the oceans has more than doubled. So it is not surprising that this monumental work contains nearly 50% more material than the 1941 edition, which in itself was unique in its field. The present work is narrower in scope but more intensive than the equally comprehensive work of SVERDRUP (*see* 5A–32, Jan. 1954, *MAB*), covering less of the field of chemical, geological and biological oceanography, and more of the physical and meteorological aspects (though in this respect SVERDRUP's book is not to be underestimated). The separate parts (each with 10–20 chapters) cover 1) Dynamics of ocean currents, 2) Dynamics of tides and tidal "waves" (*not* "tidal waves"), 3) Dynamics of surface and internal waves (80 p.), 4) Thermal properties of the sea (100 p.) including exchange between sea and air, 5) Physical "causes" of climate and weather, 6) Optics of the sea, 7) Acoustics of the sea, 8) Molecular physics of the sea, 9) Biological physics of the sea and 10) Technical physics of the sea. Considerable attention is given to the author's ideas on marine and continental influences on climate, climatic changes, atmospheric waves (theory of thermobaric waves or seiches in the atmosphere), singularities, etc. involving beautiful, colored charts. Some sections are highly theoretical—there being hardly a subject in the book on which the author has not made some original contribution since 1922 (he published several papers in *Akademii Nauk SSSR, Doklady* in 1954 on **Waves in the open sea,** when he was well past 70 years of age); for instance **Drift of ice field** (1938–41), **Wave dynamics** (1924–54), **Thermics** (1926–29–31), **Optics** (1922). He also illustrates many instruments which he has invented. The author does not neglect references to the work of DEFANT, SVERDRUP, KRÜMMEL, BJERKNES and ROSSBY, as well as to that of Russian authorities such as SHOKAL'SKII, DOBROKLONSKII, ZUBOV, etc. A few odd subjects such as the "sound of the sea" and the dynamics of fish have practical as well as theoretical interest, and are covered in detail. A good author and subject index is appended. There are over 125 references to the author's own work. *Subject Headings:* **1. Physical oceanography 2. Marine meteorology 3. Textbooks.**—*M.R.*

6.2–3 551.5:63(02)

Viaut, André and Sanson, Joseph (*French Met. Serv.*), **Le temps et le travaux des champs. Conseils aux agriculteurs.** [Weather and agriculture. Advice to farmers.] Paris, Presses

Universitaires de France, **1953.** 144 p. 20 figs., tables, 4 plates (photos.). **DWB**—The authors have presented an original and reliable account of the service that modern meteorology can render to the farmer—especially in the forecasting field, but also in the field of climatology and bulletins or warnings. The separate chapters discuss: I. Short range forecasts, II. Medium range forecasts, III. Use of a climatological station in agricultural development, IV. Solar radiation, V. Temperature, VI. Humidity and precipitation, VII. Wind, VIII. Applications of climatology, IX. Crop forecasts based on seasonal meteorological data, X. Use of meteorological data in modern rural life (forest fires and gales, fog, and spoilage of materials or crops) and, finally, XI. Use of aviation in crop protection, etc. *Subject Headings:* **1. Agricultural meteorology 2. Applied climatology 3. Agro-meteorological forecasts 4. Textbooks.**—*M.R.*

6.2–4 551.521:530.145(02)

Heitler, Walter, **The quantum theory of radiation.** 3rd ed. Oxford, Clarendon Press, **1954.** 430 p. 32 figs., 13 tables, numerous refs. and eqs. *International Series of Monographs on Physics.* **DWB**—This 3rd edition of HEITLER's text on quantum theory is greatly enlarged, but additions have been confined to the electrodynamics of electrons and positrons; while the electrodynamics of mesons and nucleons, and nuclear physics have been omitted. The major sections are: I. Classical theory of radiation, II. Quantum theory of pure radiation field, III. Electron field, IV. Perturbation theory, V. Radiation processes, VI. Radiative corrections and VII. Penetrating power of high energy radiation. Emission and absorption, line breadth, dispersion, Bremsstrahlung, etc. are discussed in Sec. V and action of cosmic rays on matter due to collision (cascade showers, etc.) under Sec. VII. A subject and author index are provided. *Subject Headings:* **1. Radiation theory 2. Quantum theory 3. Cosmic ray theory 4. Textbooks.**—*M.R.*

6.2–5 551.579.4:627.51(02)

Leopold, Luna B. and Maddock, Thomas, Jr., **Flood control controversy. Big dams, little dams, and land management.** Sponsored by The Conservation Foundation. N. Y., Ronald Press Co., **1954.** 278 p. 19 figs., 12 tables, foot-refs., bibliog. p. 253–255. Critical review by PEVERIL MEIGS, in *Geographical Review,* 45(2):301–303, April 1955. **DWB**—After discussing geographical, engineering and administrative aspects of flood control, the book continues with chapters on land management, downstream control of floods, upstream control, effect of forest and grasslands, and other controversial aspects. The agricultural, commercial and industrial interests are so divergent that it is difficult to harmonize them in any rational program. The roles of rainfall, infiltration, evaporation, runoff, erosion, the U. S. Weather Bureau, etc. in the complicated pattern are discussed, as well as the economic problems such as estimates of flood damage and the value of a flood warning service. Most material applies to the United States, but technical information would be universally applicable. *Subject Headings:* **1. Flood control 2. Textbooks I. Meigs, Peveril.**—*M.R.*

6.2–6 551.582(261,268,481):656.6

Great Britain. Hydrographic Office, **Norway pilot, Vol. 3, Comprising the north-western and northern coasts of Norway from Halten to Jakobselva.** 4th ed. London, **1953.** 51+ 833 p. 8 plates, tables. **GB-MO**—This volume follows the usual lines, with general meteorology (p. xxxvi–li) and climatic tables (p. 32–44). *Subject Headings:* **1. Pilot guides 2. North Atlantic 3. Arctic Ocean 4. Norway.**—*C.E.P.B.*

COLLECTED WORKS AND REVIEWS

6.2–7 551.5:061.3

American Meteorological Society [and] Royal Meteorological Society, **Proceedings of the Toronto Meteorological Conference, September 9–15, 1953.** London, Royal Meteorological Society, **1954.** 294 p. figs., tables, refs. **DWB**—This volume includes text or summaries of 50 papers read at nine symposia, with introductory remarks and discussions. The subjects were: Ozone and the high atmosphere; Radiation and other energy transformations; Arctic meteorology; The general circulation; Modern cyclone theory; High-level forecasting; Climatic change; Microclimatology and micrometeorology; Cloud physics and induced precipitation. The papers will be abstracted separately. (*See* Pt. 3, Contents, p.

1338–1340, Nov. 1954, *MAB* for listing of authors and titles.) *Subject Headings:* **1. Meteorological conferences 2. Toronto Meteorological Conference, 1953.**—*C.E.P.B.*

6.2–8 551.509.2/3 551.509.67

*§Espy, James Pollard, **Report on Meteorology. First to Fourth.** Wash., D. C. (1843)–1857. 4 vol. in 3. numerous charts (many fold.), tables. v. 1 is photostat of original. First Report submitted to Surgeon General of the U. S. Army. Second and Third Reports to Secretary of the Navy. Fourth Report as **Message from the President of the U. S. communicating . . . the Fourth Meteorological Report,** Senate Executive Doc. no. 65, 34th Cong., 3rd session. **DLC**—The first of these famous "reports" (1843) contains a brief text discussing the project which the author conceived for determining synoptically the size, shape, motion and trajectory of cyclonic storms. The observations were taken at 3 p.m. and embraced the U. S. east of the 95th meridian, Bermuda, Newfoundland and eventually ships in the N. Atlantic. In Dec. 1842 Espy sent out forms and instructions to several hundred possible observers and by the next summer had enough reports to construct synoptic charts based on wind direction and speed, pressure (over 50 barometers), temperature, pressure and temperature changes, weather and precipitation amount. He drew in the axis of low pressure, which in most cases was curved (convex toward E or SE) and presented a perfect picture of a cold front advancing eastward. His line of maximum pressure was usually in advance of the warm front, though sometimes coinciding. No isobars or isotherms were drawn, so the charts resembled air flow charts of today. Generalizations drawn from study of 3 months of charts (Jan.–March 1843) are remarkably sound. On the other hand, Espy went "overboard" with his enthusiasm for producing artificial rain by having observers set grass or forest fires during drought and reporting clouds and rain which should usually ensue. He even reported numerous successes. The second report (1850) gives names and locations of all corresponding observers, an expanded list of generalizations and theory derived therefrom, and accounts of successful rain making experiments (verified and certified) on the above basis. The third report (1851) contains directions or rules for mariners, including data and remarks on weather in all parts of the world, even the Antarctic, and on global circulation, glacial anticyclones, radiation balance and temperature of space (Poisson said it was 32°F, Fourier—90°F and Poillet—222°F; Espy agrees with the last). Dozens of analyzed synoptic charts for 1843, 1844 and 1845 are included. The fourth and last report is a voluminous compilation of text (240 large pages) and large folded synoptic maps and graphs. The maps are for the years 1851 and 1852 and cover the entire U. S. though reports from the West are scanty. A great deal of tabulated data from the now quite extensive observational network is included. The generalizations and theory are much more developed than in the earlier works. The Smithsonian was cooperating in the last years. *Subject Headings:* **1. Synoptic charts 2. Synoptic networks 3. Artificial precipitation 4. Cyclone theory 5. U. S.**—*M.R.*

6.2–9 551.556:551.481.1 551.515:525.63

†Kivisild, Hans R., **Wind effect on shallow bodies of water with special reference to Lake Okeechobee.** *Stockholm. Tekniska Hogskolans. Vattenbyggnds-institutionen, Bulletin,* No. 43, **1954.** 146 p. 14 plates, bibliog. p. 138–144, numerous eqs. **DWB**—This monograph comprises a systematic and thorough review of previous studies on wind effects on shallow bodies of water, seiches, etc., and an analytical and synthetic attempt to formulate a theory of such wind effects with special application to Lake Okeechobee, Florida. Finally, detailed data for 5 hurricanes (1945–50), which affected Lake Okeechobee are analyzed and presented as a test of the theory. Field as well as model tests are used to determine a formula for hydrodynamic drag of a free water surface. Hurricane data cited lead to conclusion that turbulence mixing length $m = 0.15$ cm should be used instead of $m = 0.2$ cm in the wind force portion of the formula. A triangular grid is recommended for similar studies. Meteorological factors are considered at some length. Profiles are presented graphically. *Subject Headings:* **1. Wind effects on shallow water 2. Storm tides 3. Mixing length coefficients 4. Lake Okeechobee, Florida.**—*M.R.*

6.2–10 551.510.41

Regener, Victor H., **Atmospheric ozone.** New Mexico. Univ. Dept. of Physics, Contract AF 19(122)-381, Scientific Reports, No. 1–5, June 22–Aug. 13, **1954,** 5 pieces.

figs., tables, refs., eqs. Also: **Final Report,** Aug. 15, **1954.** 16 p. **MH-BH**—Report No. 1 entitled **The direct spectrographic measurement of atmospheric ozone concentrations;** No. 2, **The installation at Capillo Peak for the recording of the zodiacal light;** No. 3, **Analysis of zodiacal light recordings obtained at Capillo Peak Observatory;** No. 4, **Atmospheric ozone in the boundary layer;** and No. 5, **Recordings of surface ozone in New Mexico** (including voluminous graphic data for surface meteorological conditions at Albuquerque). The **Final Report** summarizes the work of the project and the essentials of the 5 reports, and contains chapters on (II) spectrographic measurement of O_3, (III) vertical distribution of O_3, (IV) O_3 in Los Angeles region, (V) in the boundary layer, (VI) surface O_3 in New Mexico and (VII) conclusions and recommendations. Automatic chemical methods used are said to be accurate within a few % and give reliable results even in the presence of large amounts of air pollution. Direct spectrographic determination of vertical O_3 distribution using a flash tube as an artificial light source is feasible. Mountain top readings near Albuquerque show the increase of O_3 during cold front passage, whereas the valley stations show typical diurnal variation where nocturnal inversions prevail. Using mountain and valley data obtained over many months, an estimate of turbulent diffusion relationships and O_3 flux to ground (4.10^{10} molecules cm^2sec) was obtained. The report summarizes the results of 7 years of concentrated effort by the author and numerous assistants. *Subject Headings:* **1. Ozone research 2. New Mexico 3. Los Angeles. I. New Mexico. Univ. Dept. of Physics II. Contract AF 19(122)-381.**—*M.R.*

GENERAL METEOROLOGY

6.2–11 551.5:06:629.13

Hoyt, Kendall K., **New air weather service.** *Business Flying,* Madison, Wisc., 2(3):8–9, Nov. **1953.** fig., photo. **DWB**—Remarks on improvements in U. S. Weather Bureau service to pilots (in spite of recent budget cuts). Pilots reports, new weather broadcast program for private pilots, new standard display system for reports at terminals, flight checking and familiarization flights by Weather Bureau personnel and forecasters, and new pilot's weather reporting form are among the innovations mentioned. *Subject Headings:* **1. Airways meteorological services 2. Aeronautical meteorology. I. U. S. Weather Bureau.**—*M.R.*

6.2–12 551.5:06

International Meteorological Organization. **Convention of the World Meteorological Organization. Authentic text.** (Lausanne, Secretariat of the International Meteorological Organization, **1948?**) 18 p. **DLC**—The original English version of the text of the convention which was signed at the last (Washington) meeting of the IMO (Sept. Oct. 1947) and ratified by 42 countries during the following year. The purpose, membership qualifications, organization, Congress, Executive Committee, Regional and Technical Commissions, Secretariat, Finances, Relation with U.N., etc. are set forth briefly but clearly. *Subject Headings:* **1. WMO. Convention 2. World Meteorological Organization. I. World Meteorological Organization.** —*M.R.*

6.2–13 551.587:06 551.5:06

World Meteorological Organization. Commission for Aerology, **Abridged final report of the First session, Toronto, Aug. 10–Sept. 5, 1953.** *WMO,* No. 18, RP. 8, **1953.** 101 p. Price: Sw.fr.3.—. Also: Fulks, J. R. (*U. S. W. B., Wash., D. C.*), **First Session of the Commission for Aerology, WMO, Toronto, 1953.** *American Meteorological Society, Bulletin,* 34(10):435–437, Dec. **1953. DWB**—1) A list of 41 delegates, observers, experts and advisors who attended the 1953 session of the Aerological Commission in Toronto, is followed by a list of 31 agenda items, 110 documents presented, a general summary of work of session, 12 lectures on scientific subjects, a list of 12 resolutions and 36 recommendations. 2) Details of Toronto session, Aug. 10–Sept. 5, 1953, the delegates attending and 10 specific recommendations (on physical constants, definitions, etc.) are outlined. Emphasis was placed on universal publication of all daily aerological data by each country and on the aerological program for the International Geophysical Year, 1957–1958. *Subject Headings:* **1. WMO. Aerological Commission 2. WMO. conferences 3. Aerological programs 4. International Geophysical Year, 1957–1958.**—*M.R.*

6.2–14 551.5:03

World Meteorological Organization. Commission for Bibliography and Publications, **Lexique météorologique. Mots dans l'ordre de la Classification Decimale Universelle.** [Meteorological glossary. Words in Universal Decimal Classification order.] *World Meteorological Organization, CBP-L, Doc.* 17, Oct. 22, **1953.** unpaged. Also its: **Polyglot meteorological vocabulary. English, French, Spanish and Russian. Submitted by the President of the Commission.** *Ibid.*, CBP-I/Doc. 18, Oct. 22, **1953.** 113 p. Both pieces mimeo. and bound together. **DWB**—French meteorological terms are listed according to U.D.C. (551.5) system. Each term is defined in French. U.D.C. numbers are listed from 551.5 to 551.596.5. Second piece consists of about 1000 terms listed in four languages—English, French, Spanish and Russian and placed alphabetically under each number of U.D.S. system. On p. 108–113, International Ice Nomenclature is given also in 4 languages. *Subject Headings:* **1. Definitions 2. French meteorological terminology 3. U.D.C. 4. Polylingual glossaries 5. Meteorological glossaries 6. English-French-Spanish-Russian glossaries.**—*M.R.*

6.2–15 551.5:06

World Meteorological Organization. Regional Association IV (North and Central America), **Abridged final report of the Session, Toronto, Aug. 4–7, 1953.** *WMO,* No. 23, RP. 11, 1953. 61 p. Price: SW.fr.3.—. Also: **First Session of Regional Association IV (North and Central America).** *World Meteorological Organization, WMO Bulletin,* 11(4):108–109, Oct. **1953. DWB**—1) List of 14 delegates and observers, agenda (26 items), minutes, summary of work and resume of 44 resolutions, 7 recommendations and 40 documents submitted to Toronto Conference in Aug. 1953. 2) First session under WMO was held at Toronto, Aug. 4–7, 1953. Representatives from 7 countries and 3 allied organizations participated. The Eastern Caribbean Hurricane Committee, under the chairmanship of W. A. GRINSTED, was continued. Solar radiation data for the regions will be published by the U. S. ANDREW THOMSON of Canada was elected President for the next term. FRANCIS W. REICHELDERFER, President of WMO, was honored on his birthday. *Subject Headings:* **1. WMO. Regional Association IV, North and Central America 2. WMO. meetings.**—*M.R.*

6.2–16 551.5:92

Arakawa, Hidetoshi, **Three pioneers in the weather science: J. Bjerknes, C.-G. Rossby and E. Palmén.** *Meteorological Society of Japan, Journal,* 2nd Ser., 30(2):70–72, Feb. **1952.** 2 photos. In Japanese. **MH-BH**—Biographies and scientific activities of the three meteorologists are summed up and some of their publications quoted. Portraits of BJERKNES and ROSSBY are presented. *Subject Headings:* **1. Meteorologists 2. Biography 3. Bjerknes, Jakob 4. Rossby, Carl-Gustav 5. Palmén, Erik Herbert.**—*G.T.*

6.2–17 551.5:92

Mr. C. K. M. Douglas, O.B.E., A.F.C., B.A. *Meteorological Magazine,* London, 83(986): 225–226, Aug. **1954.** photo. **DWB**—Assistant Director of the Meteorological Office (Central Forecasting) retired May 28, 1954. Born 1893, joined Royal Flying Corps in 1915, Meteor Flight April 1918, Meteorological Office Aug. 1919. From 1925 onwards in Forecast Division. Author of numerous papers since 1916, beginning with cloud forms and continuing with forecasting research. *Subject Headings:* **1. Biography 2. Douglas, C.K.M.**—*C.E.P.B.*

6.2–18 551.5:92

Feather, N., **Mr. E. G. Dymond.** *Nature,* 171(4343):153, Jan. 24, 1953. Also: Paton, James, **Mr. E. G. Dymond, M.A., F.R.S.E.** *Royal Meteorological Society, Quarterly Journal,* 79(339):184, Jan. **1953.** And Scrase, Frederick John, **Edmund Gilbert Dymond, M.A., F.R.S.E.** *Meteorological Magazine,* London, 82(968):61–62, Feb. **1953. MH-BH, DWB**—EDMUND GILBERT DYMOND, born at Hairwain, S. Wales in 1900, died at Edinburgh on Oct. 26, 1952. Educated at Cambridge, England, afterwards investigated problems of electron collisions in gases, then turned to cosmic ray research with balloon-borne apparatus and ozone distribution. At Kew developed and perfected British radiosonde. *Subject Headings:* **1. Obituaries 2. Dymond, Edmund Gilbert.**—*C.E.P.B.*

6.2–19 551.5:92

Hinzpeter, Hans, **Zum Ausscheiden Professor Dr. Falckenbergs aus dem Meteorologischen und Hydrologischen Dienst.** [Resignation of Prof. Dr. Falckenberg from the Meteorological and Hydrological Service.] *Zeitschrift für Meteorologie*, Berlin, 7(6):161–162, June **1953. MH-BH**—In connection with the retirement of Prof. FALCKENBERG on March 31, 1953 from the Meteorological and Hydrological Service of the German Democratic Republic the author reviews some of the more important contributions of Prof. FALCKENBERG to meteorology. He investigated the heat balance in the lower layers of the atmosphere, establishing the existence of an isothermal layer of several hundred meters on cloudless days before sunrise; the physical factors underlying changes in temperature gradients such as extent and magnitude of nocturnal inversions; the importance of radiation in the band gap between the rotation oscillation band and rotation band of water vapor; the radiation absorption of water vapor and carbon dioxide and its relationship to atmospheric pressure; measurement of counter radiation with a vibration pyranometer developed by him, etc. *Subject Headings:* **1. Falckenberg, G. 2. Biography 3. Radiation.**—*I.L.D.*

6.2–20 551.5:92

Dr. A. H. R. Goldie, C.B.E., F.R.S.E., *Meteorological Magazine*, London, 82(972):161–163, June **1953.** photo. **MH-BH**—Retired from British Meteorological Office May 4, 1953, after nearly 40 years of service. Deputy Director (Research) since 1948. In 1952 married Miss N. Carruthers who also retired. *Subject Headings:* **1. Biography 2. Goldie, A. H. R. 3. Carruthers, Nellie.**—*C.E.P.B.*

6.2–21 551.5:92

Hawke, Erik Ludow, **Sir Richard Gregory, Bt., D.Sc., F.R.S.** *Royal Meteorological Society, Quarterly Journal*, 79(339):183, Jan. **1953.** Also: **Gregory, Sir Richard, Bart, F.R.S., Obituary, [including contributions by H. H. Dale, E. John Russel and O. J. R. Howarth.]** *Nature*, London, 170(4326):520–522, Sept. 27, **1952. DWB**—RICHARD ARMAN GREGORY was born in Bristol Jan. 29, 1864, died Sept. 15, 1952. Author of numerous elementary textbooks. Assistant Editor of Nature 1893, Editor 1919–1939. Published **Discovery: or the Spirit and Service of Science** in 1916. President of Royal Meteorological Society 1928–30; President of British Association 1940–46. *Subject Headings:* **1. Obituaries 2. Gregory, Sir Richard Arman.**—*C.E.P.B.*

6.2–22 551.5:92

Bureau, René (*Laval Univ., Quebec*), **Monseigneur Clovis Laflamme et la météorologie.** [Monsignor Clovis Laflamme and meteorology.] *Le Naturaliste Canadien*, Quebec, 79(8/9): 276–283, Aug./Sept. **1952.** 14 refs. **DLC**—Description of the scientific career of Msgr. LAFLAMME from 1867 to 1908. Rector of Laval University at Quebec for three terms and a member of several distinguished scientific societies, LAFLAMME dedicated most of his scientific efforts to studies in astronomy and meteorology. He also organized a co-operative meteorological observation network with the particular aim of investigating properties of thunderstorms. Although this enterprise was a failure owing to lack of equipment and of understanding on the part of collaborators, the author considers LAFLAMME to be one of the foremost pioneers of meteorology in Canada. His astronomical and meteorological publications (mostly brief articles and notes) are listed. The author also mentions the work of DR. J.-A. CREVIER, another early Canadian meteorologist. *Subject Headings:* **1. Biography 2. Laflamme, Clovis.** —*G.T.*

6.2–23 551.5:92

DuBridge, L. A. (*Calif. Inst. of Technology, Pasadena*), **Robert Andrews Millikan: 1868–1953.** *Science*, 119(3087):272–274, Feb. 26, **1954.** Also: Brode, Robert B., **Prof. Robert A. Millikan.** *Nature*, London, 173(4398):287–288, Feb. 13, **1954. DWB**—Born in Morrison, Ill., March 22, 1868, died in Pasadena, Calif., Dec. 19, 1953 (86 years old). These articles comprise a summary of his outstanding contributions in atomic physics (measurement of charge on electron), which led to his receiving the Nobel Prize in 1923; photoelectric determination of Planck's constant; bridging gap between UV and X-radiation by extensions of the

UV spectrum from 600A down to 200A; his extensive investigations of what he named "cosmic rays" in the 1920's and other activities in the field of research and education, (director of C.I.T., teacher of physics and writer of the most widely used physics textbook in America) Finally, mention is made of his work in 1917–18 in organizing and directing the National Research Council and as an officer in the Signal Corps when he directed a program of meteorological and aerological observation for the Armed Forces. *Subject Headings:* **1. Obituaries 2. Millikan, Robert Andrews 2. Cosmic ray research.**—*M.R., C.E.P.B.*

6.2–24 551.5:92

Spence, M. T., **Dr. R. E. Watson, Ph.D., B.Sc.** *Royal Meteorological Society, Quarterly Journal*, 78(338):657–658, Oct. **1952.** Also: **Obituary, Dr. Robert Edward Watson.** *Meteorological Magazine*, London, 81(964):317–318, Oct. **1952. DWB**—British meteorologist, born April 1, 1889, died May 28, 1952. Joined Meteorological Office March 1918. Served at Falmouth and Kew Observatories, working on geophysics (pyrheliometry, magnetism and atmospheric electricity). From 1934 meteorological officer in Royal Air Force. *Subject Headings:* **1. Obituaries 2. Watson, Robert Edward.**—*C.E.P.B.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATION

(*See also:* **Index of drought conditions** (McQuigg), 6.2–262.

6.2–25 551.501:551.577

Weiss, L. L. and Wilson, W. T. (*U. S. W. B., Wash., D. C., Hydrologic Ser., Div.*), **Evaluation of significance of slope changes in double-mass curves.** *American Geophysical Union, Transactions*, 34(6):893–896, Dec. **1953.** 4 figs., 3 refs. **MH-BH**—The double-mass method is commonly used in the interpretation of precipitation records. Interpretation of double-mass curves frequently involves rejection or acceptance of indicated changes in slope. Often, the decision must be based on inadequate station records. In any case, it is important that the analyst should know the probability of getting an abrupt slope change purely by chance. The significance of any slope change can be evaluated by a statistical treatment making use of range instead of standard deviations. The application is simplified by a special protractor and simple nomograph. *Subject Headings:* **1. Double mass curves 2. Precipitation record analysis 3. Nomograms.**—*Authors' abstract.*

6.2–26 551.501:551.578.46

Munn, R. E. (*Canada Met. Division, Halifax, N. S.*), **The measurement of snow depth.** *American Meteorological Society, Bulletin*, 35(3):133–134, March **1954.** 2 figs., 4 refs. **MH-BH**—Two charts are presented for determining the number of snow stakes or measurements needed in a given area to get a true mean for that area within ± 1, 2, 3, 4 or 5" to 95% or 99% confidence, respectively. By the reverse procedure, two areas can be compared as to significance of differences in snowfall amounts. Drifting of the snow complicates the statistics since one does not know, in that case, whether the standard deviations are the same. *Subject Headings:* **1. Snow depth measurement techniques 2. Snow drifts.**—*M.R.*

6.2–27, 551.501.3:551.55 551.501.3:551.591

Eickermann, Walter, **Untersuchungen über die Struktur nichtlinearer Skalen.** [Investigations into the structure of non-linear scales.] *Meteorologische Rundschau*, 7(9/10):177–182, Sept./Oct. **1954.** 6 figs., 6 tables, 11 refs., eqs. **DWB**—The logical ("psychophysical") basis of the visibility scale is discussed and a scheme is set out in which the steps increase geometrically, the equivalents in km being the harmonic mean of each step. The statistical treatment is set out with an example. The Beaufort wind scale is next examined. Frequencies of Beaufort forces at Hochrhön gave a nearly straight line on probability paper. For visibility the geometric mean is representative, for wind velocity the x^{th} power of the arithmetic mean of the x^{th} roots of the velocities ($x = 1.493$). *Subject Headings:* **1. Beaufort scale 2. Visibility scales.**—*C.E.P.B.*

6.2–28 551.501.42:551.571 551.508.71:016

†*U. S. Weather Bureau, **Relative humidity-psychrometric tables. Celsius (centigrade) temperatures.** Revised edition by Technical Investigations Section, Station Facilities and Meteorological Observations Division. Wash., D. C., **1953.** 32 p. tables, bibliog. p. 9–18, eqs. Price: 15¢. **DWB**—Contains, besides usual centigrade tables for 0–44°C and 0 to −40°C and 25.5° depression, at 29.24″ pressure, 125 references with brief annotations on the development of psychrometers and psychrometric formulas from 1750–1953 (prepared by Louis P. Harrison). Corrections for different atmospheric pressures are appended. Recommended psychrometric procedures, ventilation rates, formulas, definitions, etc. are included, based on latest (1941) I.M.O. specifications. *Subject Headings:* **1. Psychrometric tables 2. Psychrometry bibliographies. I. Harrison, Louis P.**—*M.R.*

6.2–29 551.501.45:551.577

Kéri, Menyhért, **A területi csapadékátlagokról.** [On regional precipitation averages.] *Időjárás*, 58(3):129–136, May–June **1954.** 3 figs., 2 tables, 6 refs. Russian and French summaries p. 129. **MH-BH**—The four most widely adopted methods of regional average computation (arithmetic mean, method of squares, isohyetal method and polygonal method) are applied in a comparative manner to precipitation data in Hungary. It is found that regional precipitation averages for Hungary can be obtained with sufficient accuracy by the method of arithmetic means. This statement, however, does not apply to the medium height mountain regions. *Subject Headings:* **1. Precipitation calculations 2. Precipitation normals 3. Hungary.**—*Trans. from author's abstract.*

6.2–30 551.501.45:551.524

Makjanić, Berislav, **Kako računati dnevni srednjak temperature zraka?** [How to compute daily mean atmospheric temperature.] *Yugoslavia. Hidrometeorološka Služba, Vesnik*, 3(1/2):7–14, Jan./June **1954.** 6 tables, 5 refs., 3 eqs. **DWB**—Discussion of the use of (1) $t=\frac{1}{3}(t_7+t_{14}+t_{21})$ and (2) $t=\frac{1}{4}(t_7+t_{14}+2xt_{21})$ for determining average temperature from temperature values taken at 7, 14 and 21 h. Arguments in favor and against either formula are reviewed and opinions of international authorities quoted. The writer concludes that formula (2) is useful for determining average temperatures for periods of more than one day, but should not be used in computing average temperature for a single day. There is no uniformity, at present, among the various services of Yugoslavia as to the use of the two formulas. *Subject Headings:* **1. Temperature averaging 2. Statistical techniques.**—*G.T.*

6.2–31 551.501.45:551.521

Yamamoto, Giichi and Onishi, Gaishi (*Tohoku Univ.*), **A chart for the calculation of radiative temperature changes.** *Tohoku University, Science Reports, 5th Ser., Geophysics*, 4(3):108–115, March **1953.** 4 figs., 2 tables, 10 refs., 14 eqs. **MH-BH**—Elements of the divergence of radiative flux in the atmosphere are analyzed theoretically. As a result of the analysis, flux divergence charts are constructed for water vapor and carbon dioxide. The author's numerical results are compared with those obtained by other investigators. *Subject Headings:* **1. Computation charts 2. Radiative transfer 3. Radiation calculations.**—*G.T.*

6.2–32 551.501.45:551.524

Richardson, W. E., **Average temperatures in remote places.** *Weather*, 9(5):159–160, May **1954.** table. **DWB**—Letter suggests that where daily observations are not practicable, mean air temperature for the month could be found from earth temperature at 1 ft on the 23rd of the month, with a correction K. Monthly values of K are given for 4 places in Britain. *Subject Heading:* **1. Temperature observation.**—*C.E.P.B.*

6.2–33 551.501.45:551.524.37

Smith, L. P., **Length of a frost-free period.** *Meteorological Magazine*, London, 83(981): 81–83, March **1954.** fig., 2 tables, ref. **MH-BH**—At Rothamsted odds C against unity of a frost-free period of a given length or less are given by

$$\text{length (days)} = (178.6 - 24.2 \log C).$$

In frost hollow at Rickmansworth corresponding formula is $(97.3-31.7 \log C)$. *Subject Headings:* **1. Methods of computation 2. Frostfree period.**—*C.E.P.B.*

6.2–34 551.501.45:551.571

Showalter, A. K. (*U. S. W. B., Wash., D. C.*), **Precipitable water template.** *American Meteorological Society, Bulletin*, 35(3):129–131, March **1954.** fig. **MH-BH**—A handy template is presented for computing total precipitable water between standard levels from plotted dew points (or mixing ratio) on a pseudo-adiabatic chart. The values will be accurate to <5% if dew point curve approximates the pseudo-adiabatic, and for large values of precipitable water (>1.50 in.). For low water content (<0.50 in.) or stratified moisture layers, errors of about 10% may occur. The template is based on Solot's (1939) formula. A direct approach may be had by using U. S. Weather Bureau tables of precipitable water (U. S. Weather Bureau, Technical Paper, No. 14). *Subject Headings:* **1. Precipitable water computation 2. Templates.**—*M.R.*

6.2–35 551.501.45:551.577.22

Schneider-Carius, Karl, **Zur Frage der täglichen Niederschlagswahrscheinlichkeit.** [On the problem of probability of daily rainfall.] *Annalen der Meteorologie*, 5(7–12):254–258, **1952.** fig., table, 5 refs. **MH-BH**—Rainfall frequencies of 0.3 mm and above in a day decrease with logarithm of amount; 0.1 and 0.2 mm are too many and so subject to errors as to be unsuitable for statistical work. Author proposes classifying amounts in a logarithmic scale for climatological purposes. *Subject Heading:* **1. Rainfall data analysis.**—*C.E.P.B.*

6.2–36 551.501.45:551.579.5:681.1

Rowland, Elmer F.; Fagan, T. D. and Crabb, George A., Jr., **A slide rule for soil moisture determinations.** *Agricultural Engineering*, Saint Joseph, Michigan, 35(3):163–164, March **1954.** 2 p. fig., 5 refs. **DA**—The authors have devised a special-purpose slide rule which in one operation successfully corrects the observed electrical resistance of Bouyoucos-type, plaster of Paris, soil-moisture blocks for soil-temperature variations, and converts the corrected resistance readings to percentages of available soil moisture in soils with average salt contents. Formulas for the construction of this slide rule as well as the more generally used correctional nomograms are presented, along with pertinent design data and instructions. *Subject Headings:* **1. Slide rules 2. Soil moisture determinations 3. Nomograms.**—*Authors' abstract.*

6.2–37 551.501.6:551.524.2(781)

*Blumenstock, David I. (*Rutgers Univ.*), **The reliability factor in the drawing of isarithms.** *Association of American Geographers, Annals*, 93(4):289–304, Dec. **1953.** 6 figs., 2 tables, 13 refs. **DLC**—The author shows by an example taken from a mean temperature chart (July) for Kansas, using 36 (5-1st and 31-2nd order) stations and drawing isotherms for every 1°F, that four different patterns can be obtained by (1) using data exactly as published (uncorrected) and drawing lines exactly as data indicate, (2) using data corrected for bias at all 2nd order stations, (3) correcting for bias but smoothing (generalizing somewhat) and (4) generalizing radically (ignoring 10 out of the 36 values as having sufficient unreliability to warrant drawing the isarithm on the "wrong" side of the station in question). A table is presented to give a basis for evaluating the magnitude of the probable error due to observational error, sampling error and lines. *Subject Headings:* **1. Cartography 2. Isothermal charts 3. Reliability of climatic data 4. Isarithms 5. Kansas.**—*M.R.*

6.2–38 551.501.81:551.576.11

*Frost, R., **Cumulus and cumulonimbus cloud over Malaya.** *Great Britain. Meteorological Office, Meteorological Reports*, 2(15), **1954.** 18 p. 2 figs., 9 tables, 14 refs. At head of title M.O. 535j. **GB-MO**—In 1950, flights with airborne radar were made through clouds over Malaya and Sumatra. Change from Cu to CuNb occurs at 30–33,000 ft, tops of CuNb ranged up to 54,600 ft (height of tropopause). Intensity of radar response is described. Hail was met in only 7 of 87 CuNb clouds, snow or sleet in 14 of 110, lightning in 35 of 110 flights. Highest gust 1.1g (49 ft/sec). Updraughts varied from +12 to −3 ft/sec in Cu and +21 to −6 in CuNb. Turbulent areas can be dodged by avoiding radar-response areas

by a mile. Accelerometer records are shown and tabulated. Temperature within clouds was 0–6°C below environment. Comparisons are made with U. S. Thunderstorm Report. *Subject Headings:* **1. Cloud structure 2. Radar analysis of clouds 3. Vertical velocities 4. Malaya.**—*C.E.P.B.*

6.2–39 551.501.89:551.594.52

McNamara, A. G. and Currie, B. W. (*Physics Dept., Univ. of Saskatchewan, Saskatoon*), **Radio echoes during aurora.** *Journal of Geophysical Research*, 59(2):279–285, June **1954.** 4 figs., 6 refs. **MH-BH**—A reassessment of all the Saskatoon data on 56- and 106-Mc/sec echoes from aurora suggested that some of the 56-Mc/sec echoes might have occurred through backward scatter from the land via the lower part of the ionosphere. These could have originated only through the second-lobe transmission of the radar equipment. Two antennae placed at heights to give the maximum resolution between echoes arising in directions corresponding to the first- and second-lobe signals were used to examine this possibility. The results show that practically all (if not all) the echoes were due to direct reflection from aurora. *Subject Headings:* **1. Radio echoes from auroras 2. Auroras 3. Saskatoon, Saskatchewan.** —*Authors' abstract.*

OBSERVATIONAL DATA

See also: **Climatic forecasting from aerological data** (Matsukura), 6.2–76; **Microclimatology** (Benedek), 6.2–306; **Weather and plant production** (Morgen), 6.2–316.

6.2–40 551.506:525.5:001

Bonacina, L. C. W., **Natural seasons.** *Weather*, 9(8):253–254, Aug. **1954. DWB**—Suggests that as heat accumulates after the summer solstice and cold after the winter solstice, the best arrangement of seasons is the usual one of Dec.+Jan.+Feb. and so on to avoid splitting months, but Nov. 21–Feb. 21, etc. would be even better. *Subject Heading:* **1. Seasons.** —*C.E.P.B.*

6.2–41 551.506:551.55(96) 551.557(96)

*Korshover, Julius, **Mean winds over the Marshall Islands, March 1951.** California. University at Los Angeles. Institute of Geophysics. Oahu Research Center, Contract AF 19(604)-546, Scientific Report, No. 1, 4 and 6, **1954.** 15 p. 11 figs., 8 tables, eqs. **DWB**—The report summarizes, chiefly in diagrammatic forms, the mean atmospheric motion over the Marshall Islands, during months of March 1951, Oct. and Nov. 1952. Cross sections, approximately along the 167°E meridian, show the variation with height (up to 80,000 ft) and latitude (0–20°N) of the mean meridional and zonal components of the wind, the mean wind speed, the resultant wind speed, and the steadiness of the wind. *Subject Headings:* **1. Upper air wind data 2. Wind components 3. Wind data 3. Marshall Islands. I. California. University at Los Angeles. Institute of Geophysics II. Contract AF 19(604)-546.**—*Author's abstract.*

6.2–42 551.506(68) 551.509.21(68)

*South Africa. Weather Bureau, **Daagliske weerbulletin. Daily weather bulletin,** June **1954.** Monthly. entirely tables. **DLC, DWB**—Each day is represented by a sheet featuring (1) a table of maximum and minimum temperature and rainfall amount for a number of stations in South Africa (total number of stations printed on the form is 161, but information is lacking from many of these), and (2) the synoptic weather map for South Africa and the surrounding oceans. *Subject Headings:* **1. Observational data 2. Daily weather bulletins 3. Daily weather maps 4. South Africa.**—*G.T.*

6.2–43 551.506.1(932)

*New Caledonia. Service Météorologique, **Les chutes de pluie en 1950.** [Rainfall in 1950.] Noumea, Jan. 23, **1951.** 5 p. mostly tables. Mimeo. **DWB**—A summary of precipitation conditions for the year, and monthly total and number of days with precipitation for Bacouya, Kone, Paita, Pointe-Ma, Gomen and Yate, with 10-year averages (mean annual) for 1940–49, and data for 1950 only for 4 other stations: Plum, Port Laguerre, Hienghene and

Houailou (fragmentary). *Subject Headings:* **1. Annual precipitation summaries 2. New Caledonia.**—*M.R.*

6.2–44 551.506.1(494)

*Switzerland. Meteorologische Zentralanstalt, **Agrarmeteorologische Beobachtungen.** [Agrometeorological observations.] Its *Annalen*, **1952,** New Series, v. 89, Anhang, No. 7:1–2. tables. **DWB**—Daily evaporation at Zurich and Chateau d'Oex, and soil temperature at 2, 10, 20 and 50 cm depth at Zurich given *in extenso*. *Subject Headings:* **1. Evaporation data 2. Soil temperature data 3. Zurich, Switzerland.**—*M.R.*

6.2–45 551.506.7(789)

*Brasefield, C. J. (*U. S. Signal Corps Engr. Lab., Fort Monmouth, N. J.*), **Winds at altitudes up to 80 kilometers.** *Journal of Geophysical Research*, 59(2):233–237, June **1954.** 4 figs., 5 refs. **MH-BH**—Wind data have been collected at altitudes between 30 and 80 km in the course of six rocket flights at White Sands Proving Ground during 1950 and 1951. Additional wind data to altitudes as high as 40 km have been obtained since 1948 by tracking radiosondes carried aloft by special high-altitude balloons launched at Belmar, New Jersey. Day-to-day wind changes at 30 km are discussed. From the mean wind structure, inferences are drawn as to upper atmosphere temperatures at higher latitudes. *Subject Headings:* **1. Upper air wind data 2. Rocket measurements 3. Upper air temperatures 4. White Sands Proving Ground, N. Mex.**—*Author's abstract.*

6.2–46 551.506.9:551.584(782)

*Johns Hopkins Univ. Laboratory of Climatology, **Summary of observations made at O'Neill, Nebraska, July 29 to Sept. 8, 1953.** Contract AF 19(604)-289, Scientific Report, No. 5. p. 151–238, **1953.** mostly tables, graphs. Its *Publications in Climatology*, 6(5), 1953. **MH-BH**—A careful compilation of temperature (air and soil), vapor pressure, wind, solar radiation, radiation balance, shearing stress and smoke puff (turbulent exchange) data for the micrometeorological layer obtained during Aug. and Sept. 1953 during the elaborate field program sponsored by the U.S.A.F. Geophysics Research Center and cooperating institutions near O'Neill, Nebraska. Details of instrumentation are given in text, and profiles of temperature, vapor pressure and wind in graphic form. *Subject Headings:* **1. Micrometeorological data 2. Turbulent exchange 3. Radiation balance data 4. O'Neill, Nebr. I. U. S. Air Force. Cambridge Research Center. Geophysics Research Directorate II. Contract AF 19(604)-289.**—*M.R.*

INSTRUMENT CARRIERS

See also: **Constant-level balloons** (Moore, others), 6.2–118.

6.2–47 551.507.2

Frankcom, C. E. N., **Ocean network.** *Weather*, 9(2):64, Feb. **1954. MH-BH.** Also his: **"Half-century" of voyages by each of the British ocean weather ships.** *Meteorological Magazine*, London, 83(987):282–283, Sept. **1954.** 2 photos, table. **DWB**—1) Account of an attempt to recruit trawlers for meteorological reports from sea, and the difficulties met with. 2) By March 30, 1954, each of the four British ocean weather ships had completed at least 50 voyages to either station I or J. Some aspects of the work are described. *Subject Heading:* **1. Weather ships.**—*C.E.P.B.*

6.2–48 551.507.2

International Civil Aviation Organization, **North Atlantic Ocean weather stations. Agreement between the United States of America and other governments, extending agreement of May 12, 1949, open for signature at Montreal, May 28, 1952. Entered into force May 28, 1952.** *U. S. Dept. of State, Treaties and other International Acts Series*, 2589; Publication, No. 48888, **1953.** 7 p. In English, French and Spanish. Price: 10 cents (U. S. Govt. Print. Off., Wash., D. C.). **DWB, DLC**—Extension of original agreement from June 30, 1953 to June 30, 1954 signed by Belgium, Ireland, Netherlands, Norway, Portugal, Sweden, United Kingdom and United States. *Subject Headings:* **1. North Atlantic weather stations 2. Ocean weather stations.**—*M.R.*

6.2–49 551.507.2

Weather ship compromise. *Aeroplane*, London, 86(2223):245, Feb. 26, **1954. DLC**—A 2-year agreement, subject to annual review, was reached at the International Civil Aviation Organization Weather Ship Conference in Paris in Feb. 1954. The U. S. will maintain 4 instead of 5 stations (11 ships will be needed) and European countries will, after 6 months, operate 4 instead of 5 stations. Present stations will be rearranged. *Subject Headings:* **1. Atlantic weather ships 2. Ocean weather stations.**—*M.R.*

6.2–50 551.507.321.2

Barford, N. C.; Davis, G.; Herz, A. J.; Tennent, R. M. and Tidman, D. A., **High altitude free balloon flying.** *Journal of Atmospheric and Terrestrial Physics*, 5(4):219–229, Sept. **1954.** 5 figs., 2 tables, 9 refs., 9 eqs. **DWB**—Experiments with large extensible latex and neoprene balloons for cosmic ray research are described. Relations between pressure altitude and characteristics of balloon are set out; a valved balloon is shown to be theoretically suitable for prolonged constant level flight. Excess pressure due to tension and bursting extension with and without radiation were measured in a stratosphere chamber. Causes of failure in practice are discussed. Test flights (9 closed balloons, 12 with valves) were made. A single balloon can take a pay load of 3 kg to 90–100,000 ft but balloons often burst prematurely. Relative advantages of latex and neoprene are discussed. *Subject Heading:* **1. Balloon research.**—*C.E.P.B.*

INSTRUMENTS

See also: **Psychrometric tables** (USWB), 6.2–28; **Spectrometric analysis** (Broida, Morgan), 6.2–92; **Spectral reflectivity** (Gier, others), 6.2–162; **Evaporation measurement** (Sanderson), 6.2–237.

6.2–51 551.508.53/4

IAkushin, N. P., **Izmerenie kolichestva vozdukha v shakhte anemometrami i ikh tarirovanie.** [Measurement of air volume in a mine by anemometers and their calibration.] Moscow, Ugletekhizdat., **1948.** 54 p. 27 figs., 10 tables, eqs. **DLC**—Various types of anemometers are described and illustrated and their use in measuring air movements in mines or tunnels treated in a theoretical and practical manner. The calibration of the anemometers is treated in detail in Pt. II. Problems of exposure of instruments and sampling techniques are also covered in this technical manual. The particular instruments described and illustrated are: the "Metpribor," the Kazella (an anemometer with a clock attached), a differential, and a cup anemometer. *Subject Headings:* **1. Anemometers 2. Anemometer calibration 3. Air currents in mines.**—*M.R.*

6.2–52 551.508.25:551.521.63

Port Harcourt, Nigeria. Tropical Testing Establishment, **Report on ultra-violet radiation in Nigeria 1951–1952.** Its *Technical Report*, No. 243, **1953.** 10+p. 20 figs., 3 plates, tables, Mimeo. **GB-MO**—Measurements, mostly photoelectric on 3200–3900 Å, were made at Port Harcourt (25 ft, rain forest), Kano (1533 ft, semidesert), Lagos (beach, sea level) and 4 auxiliary stations up to 6000 ft, with some methylene blue observations below 3200 Å. Total energy at Port Harcourt 1.14 kw/m², of which 1.32% is UV (Nov. 1.08, Sept. 1.57). UV radiation at Port Harcourt is 71% that at Lagos (sunshine hours 65%) and 70–80% that of Kano except when at Kano UV radiation is reduced by harmattan haze. At 6000 ft in Cameron Highlands UV radiation was less than Kano. *Subject Headings:* **1. Ultra-violet radiation instruments 2. Ultra-violet radiation 3. Nigeria.**—*C.E.P.B.*

6.2–53 551.508.71

Thuman, William C. and Robinson, Elmer, **A technique for the determination of water in air at temperatures below freezing.** Stanford Research Institute, Contract AF 19(122)-634, SRI Project OU-473, Sept. 28, **1953.** 14 p. 4 tables, 2 figs., 6 refs. **DWB.** Also in: *Journal of Meteorology*, 11(3):214–219, June **1954.** 3 figs., 4 tables, 10 refs. **MH-BH, DWB**—A field apparatus at Eielson Air Base, Alaska, is described in which air, filtered to remove water or ice, is bubbled through methanol, measured quantities of which are then titrated through

Karl Fischer reagent. Up to 200 ft above ground polyethylene tubing was attached to a captive balloon. Results of 72 determinations are shown for ice fog (−30.8 to −43.0°C), mean R.H. 91% with S.D. 11.8, and good visibility (−3.8 to −31°C), mean 84%, S.D. 12.0. Difference is significant. Profiles showed little variation with height in clear weather but in ice fog, frost point fell and temperature rose with increasing height. *Subject Heading:* **1. Water content recorders.**—*C.E.P.B.*

6.2–54 551.508.822

Huddar, B. B.; Nagarajan, K.; Dhar, N. C. and Venkiteshwaran, S. P. (*Met. Off., Poona*), **The ground equipment for the F-type radiosonde.** *Indian Journal of Meteorology and Geophysics*, 4(4):347–352, Oct. **1953.** 4 figs., 4 refs. **MH-BH**—The Meteorological Office at Poona has designed and constructed a super-regeneration radiosonde receiver (for their Fan-type radiosonde) with built in 3 amp, 230 V A.C. 50 cycle power supply, loud speaker and D.C. amplifier, and a desk for working up recorder records. The moving iron armature of the recorder has been replaced by a moving coil type in an electromagnet. Drawings and photographs illustrate parts and the specifications are discussed in the text. The apparatus can be easily dismounted, transported and reassembled, and can be used on a ship at sea or on a mobile land unit. *Subject Headings:* **1. Radiosonde receivers 2. Fan-type radiosonde records 3. Poona, India.**—*M.R.*

6.2–55 551.508.91

†Curran, S. C., **The new counters.** *Science Progress*, London, 42(165):32–45, Jan. **1954.** 5 figs., 47 refs. **DWB**—Instruments are described for counting particles, beginning with Regener (1908). The characteristics of Geiger-Muller tubes designed for special purposes are set out, scintillation counters and the energy spectrum are discussed. *Subject Heading:* **1. Nuclei counters.**—*C.E.P.B.*

6.2–56 551.508.91

Donoghue, J. K. and Mack, C., **The reduction in apparent particle concentration with multiple strokes of the Owens jet dust counter.** *British Journal of Applied Physics*, 4(10): 316–317, Oct. **1953.** table, 4 refs. **DLC**—Apparent concentration of particles is tabulated after 1–20 strokes showing a steady linear decrease up to 50% or more after 20 strokes. A correction curve could readily be drawn. *Subject Headings:* **1. Owens dust counter 2. Aerosol measurement.**—*C.E.P.B.*

6.2–57 551.508.91

Dust catchers. *Review of Scientific Instruments*, 24(11):1081–1082, Nov. **1953. DLC**—Four dust sampling instruments manufactured by C. F. Casella & Co. Ltd., London, viz., the "cascade impactor," "settlement dust counter," "thermal precipitator" and "jet dust counter" are briefly described. Exclusive distributor for the U. S. is the Mine Safety Appliances Co., Pittsburgh. *Subject Heading:* **1. Dust sampling instruments.**—*G.T.*

6.2–58 551.508.91:576

Grundmann, W., **Der Keimgehalt der Luft und seine Messung.** [The germ content of the air and its measurement.] *Annalen der Meteorologie*, 5(3/5):72–77, **1952.** 7 figs., 2 refs. **MH-BH**—A new konimeter is described, suitable for outdoor or indoor counting of particles of 0.1–100μ, which includes bacteria. A hand or motor pump sucks air at 100 m/sec through an annular jet on to an agar layer in a small dish. After 24 hours incubation the bacteria colonies can be counted by eye. Microscope slides can be used instead of agar for rapid examination in cases of danger of contagion. *Subject Headings:* **1. Microbe counters 2. Aerosol filters 3. Aerobiology 4. Konimeter.**—*C.E.P.B.*

6.2–59 551.508.91:551.510.42

KHurkhrina, E. V., **K voprosu o metodike issledovaniia i gigienicheskoĭ otsenke zapylennosti vozdukha.** [The method of dust investigation and hygienic evaluation of the dust content of the atmosphere.] *Gigiena i Sanitariia*, Moscow, No. 6:16–20, June **1953. DLC**—The author reviews critically various papers that have appeared in *Gigiena i Sanitariia* during

1950–1951 on methods of determining qualitatively and quantitatively the atmospheric dust content. The author discusses the centrifugal dust counter of A. F. STOIANOVSKI, membrane filter of IA. B. REZNIK, electrofilter of N. F. LITVINOV, the electric precipitator of A. A. TRUKHANOV, etc. The problem of establishing standards for atmospheric cloud content and the biologic importance of dust particles of various sizes is discussed briefly. *Subject Headings:* **1. Atmospheric pollution instruments 2. Dust counters 3. Dust content of air 4. Reviews.** —*I.L.D.*

6.2–60 551.508.91:576

Krotov, IU. A., **Novyĭ apparat dlia mikrobiologicheskogo issledovaniia vozdukha.** [A new instrument for the microbiological investigation of air.] *Gigiena i Sanitariia*, Moscow, 4:11–15, April 1953. 2 figs. **DLC**—The apparatus is based upon the principle of the striking force of an air current against a nutritive environment. The device, which is illustrated by means of a photograph and a diagram, consists of a cylinder with a removable top, at the bottom of which is an electric motor to which is attached a centrifugal ventilator. A Petri dish is installed within the centrifuge. The operation of this device is described in detail and sample tests are presented. *Subject Headings:* **1. Atmospheric pollution instruments 2. Microbe counters.**—*I.L.D.*

6.2–61 551.508.91:576

Luckiesh, Matthew; Taylor, A. H. and Knowles, Thomas, **Sampling devices for determining the bacterial content of air.** *Review of Scientific Instruments*, 20(1):73–77, Jan. 1949. 9 figs., 7 refs. **DLC**—Various methods and devices for air sampling of microorganisms responsible for infectious diseases and/or spoilage of products are discussed before authors describe their own two types of impinger samplers. The so-called "Duplex radial-jet air sampler" has proved valuable in important laboratory experiments from which typical results are given. *Subject Headings:* **1. Air sampling instruments 2. Microbe counters 3. Microorganisms.**—*W.N.*

6.2–62 551.508.91

Pollak, L. W. and Murphy, T., **Comparison of photoelectric nuclei counters.** *Geofisica Pura e Applicata*, v. 25:44–60, 1953. 3 figs., 6 tables, 12 refs. German summary p. 44–45. **MH-BH**—Three identical photo-electric nuclei counters have been compared in pairs using natural and artificially produced aerosols. The results of several thousand comparisons show that no two counters will record the same concentration of nuclei in samples taken simultaneously from the same enclosure. Each counter shows small random fluctuations of short period, ±3% of the concentration, with superimposed unpredictable variations of longer period. The differences in readings between any two counters depend on the concentration, the type and the relative amounts of the charged and uncharged nuclei in a sample. These differences, which seldom exceed ±20% of the concentration, are rather constant for several hours and even days. This feature enables allowances to be made for the differences and a routine of observations is suggested which has been successfully employed in the laboratory and in the open. The investigation of the differences is still proceeding. *Subject Heading:* **1. Nuclei counters.**—*From authors' abstract.*

6.2–63 551.508.92

Chaney, A. L. (*A. L. Chaney Chemical Lab., Glendale, Calif.*), **A recording visibility meter.** *U. S. Technical Conference on Air Pollution, Wash., D. C.*, 1950, *Air Pollution*, p. 679–682. figs., tables, refs. **DLC**—The fundamental features of the technique using photographic photometry "are measurement of the light intensity in the direction of two or more targets located at a fixed distance from the measuring instrument." The apparatus is described with the aid of a photograph; formula for calculating the visibility is given; and its use is illustrated. *Subject Headings:* **1. Visibility meters 2. Recording instruments.**—*I.L.D.*

6.2–64 551.508.92

Foitzik, Leonard, **Die meteorologische Sichtweite, ihre Messung und ihre Registrierung.** [Meteorological visibility, its measurement and recording.] *Akademie der Wissenschaften zu*

Berlin, Wissenschaftliche Annalen, 2(7):418–425, July **1953.** 4 figs., 14 refs. **DWB**—A review of objective visibility meters used in West and East Germany, the British Commonwealth, United States and U.S.S.R. The main deficiency of visibility meters (working with artificial light) is that the influence of daylight cannot be completely eliminated. The author developed a high precision recording visibility meter working with modulated light. The photometric comparison is made by one photo cell. The basic principles are explained, a photo of the mechanical parts is given and registration curves are presented. *Subject Headings:* **1. Visibility recorders 2. Visibility meters.**—*A.A.*

6.2–65 551.508.92:535.7

Foitzik, Leonhard, **Die Reichweite von Scheinwerfen unter Berücksichtigung der atmosphärischen, optischen und physiologischen Einflüsse.** [Range of searchlights with regard to atmospheric, optical and physiological influences.] *Germany. Deutsche Demokratische Republik. Meteorologischer Dienst, Abhandlungen*, 2(9), **1952.** 79 p. 36 figs., 29 tables, 34 refs., 45 eqs. **DWB**—In this detailed study, the brightness of an illuminated object is divided into light reflected from the object and scattered light of beam. From brightness of the object and background the contrast is calculated and compared with threshold contrast of the eye for the same angle. The distance at which contrast and threshold are equal is the range. Intensity of light source is found to be less important than distance of observer from it. The range in a stratified hazy atmosphere is calculated, including a graphical determination of oblique vision. Finally, oblique vision of black objects by day and illuminated objects by night are compared. *Subject Headings:* **1. Searchlights 2. Visibility measurement.**—*C.E.P.B.*

6.2–66 551.508.92

Foitzik, Leonhard, **Sichtmessgeräte.** [Apparatus for measuring visibility.] *Annalen der Meteorologie*, 5(7–12):215–222, **1952.** 6 figs., 11 refs. **MH-BH**—Standard visibility is defined as the distance at which, in an atmosphere of uniform turbidity, the contrast between a black object of 1° angle with a cloudless sky is 2%. A meter for continuously recording this is described; it includes a beam of light which can be regulated, a reflector 250 m distant, a standard beam, a light-sensitive receiver and a recorder. Specimen records are shown; agreement with observed visibility is good by day, poor by night. *Subject Heading:* **1. Visibility meters.**—*C.E.P.B.*

6.2–67 551.508.92:535.24

Kortüm, G. and Maier, H., **Zur Frage der Abhängigkeit von Photostrom und Beleuchtungsstärke bei Photozellen und Photo-Sekundärelektronen-Vervielfachern.** [On the dependence of photocurrent and illumination in photo cells and secondary electron multiplication.] *Zeitschrift für Naturforschung*, 8a(4):235–245, April **1953.** 7 figs., 4 tables, 39 refs. **DLC**—A discussion of the possible methods of obtaining precise measurements of weak illumination (white, green, blue) with photocells and multipliers. *Subject Heading:* **1. Photoelectric photometers.**—*C.E.P.B.*

6.2–68 551.508.99:550.38

Lucke, O., **Über eine Abänderung der Anordnung der Primärspulen im electrodynamischen Theodoliten nach E. A. Johnson.** [A modification of the primary coils in the electrodynamic theodolite of E. A. Johnson.] *Zeitschrift für Meteorologie*, 8(2/3):80–86, Feb./March **1954.** 2 figs., 2 tables, 9 eqs. **DWB**—Outlines the substantial details of a yet unpublished manuscript on the design of an improved electromagnetic theodolite for the measurement of the geomagnetic field, changing the classic Helmholtz conditions for the arrangement of the primary coils. The characteristic angles are slightly enlarged, the axis is shortened by $\frac{1}{3}$, and the wire diameter is slightly reduced. The new arrangement facilitates the equalization of measurements. *Subject Headings:* **1. Geomagnetic field measurement 2. Electromagnetic theodolites.**—*A.A.*

SYNOPTIC ANALYSIS AND FORECASTING

See also: **Report on meteorology** (Espy), 6.2–8; **Daily weather bulletin** (S. Africa), 6.2–42; **Southern oscillation** (Willet, Bodurtha), 6.2–139; **Cyclogenesis aloft** (Kibler, Robinson), 6.2–144; **Cyclogenesis** (Stark, Richter), 6.2–149; **Proceedings** (Rio Grande Water Forecast Committee), 6.2–288.

6.2–69 551.509.31

Aujeszky, László, **A szinoptikai kutatás időszerű kérdései.** [Current problems in synoptic research.] *Időjárás*, 58(2):112–114, March/April 1954. **MH-BH**—The author outlines the synoptic program for 1954 of the Hungarian Meteorological Institute. The major projects planned for the year are: (1) detailed synoptic analysis of four particular situations (frost of May 1952, drought of '52, extensive fall and winter precipitation of '52, extensive rainfall in June–July '53), (2) working out a theoretical basis for synoptic precipitation forecasting, (3) working out a method for forecasting jet stream (this will necessitate more extensive aerological measurements than those currently in practice) and (4) more systematic use of advective-dynamic analysis in research and forecasting (thermobaric charts and charts of relative topography 500/1000 mb have already been used successfully, with particularly good results in frost forecasting). *Subject Headings:* **1. Synoptic analysis 2. Progress in meteorology 3. Hungary.**—*G.T.*

6.2–70 551.509.31:551.524.2

Canada. Meteorological Div., **Isotherms: representation and analysis.** Its *Cir*-2428, TRA-18, Feb. 5, 1954. 6 p. 2 tables, 3 refs. **DWB**—In accordance with recommended WMO practice, the Canadian Analysis and Forecast Centers are advised to discontinue drawing isotherms on upper level contour charts in green and to use dashed red lines for each 5°C, and intermediate isotherms for every 2.5°C interval. It is shown that upper level charts must be analyzed (fronts included) if isotherms are to be properly spaced and located. Relation of wind field to temperature field is demonstrated. The isotherms or thickness lines show the advection of cold or warm air. If lines are not spaced correctly the advection cannot be assessed properly, hence forecasts will be inaccurate. *Subject Headings:* **1. Isotherm construction on upper level charts 2. Temperature advection charts 3. Canadian weather service.**—*M.R.*

6.2–71 551.509.317

Béll, Béla, **Az aerológiai szinoptika időszerű kérdései.** [Current problems in synoptic aerology.] *Időjárás*, 58(2):115–119, March/April 1954. **MH-BH**—Discusses present state and tasks of synoptic aerology in Hungary (measurement, drawing of maps and cross sections and research work). The author also announces the establishment of a second radiosonde station (in 1955) in southern Hungary (at the first station, operating in Budapest, radiosonde ascents are being made regularly twice a day). *Subject Headings:* **1. Synoptic aerology 2. Progress in meteorology 3. Hungary.**—*G.T.*

6.2–72 551.509.317 551.513.2:551.557

§McClellan, D. E., **Jet stream analysis.** *Canada. Meteorological Div., Cir*-2425, TEC-179, Feb. 1, 1954. 6 p. 3 figs., 7 refs. **DWB**—Since actual wind observations at the 300 or 200 mb level are not sufficient for isotach analysis of jet stream areas over Canada and the U. S., a method of compiling such isotach lines on the 300 mb chart is described and illustrated. First, a rough 300 mb analysis is made. Then, assuming that in jet stream areas the 300 mb winds are parallel to the 500 mb, the isotach analysis on the 500 mb chart is extrapolated to the 300 mb by drawing isotachs of thermal wind for 500–300 mb layer on an overlay. Then treating the winds as scalar instead of vector (subtract wind speed at 500 mb from wind speed at 300 mb and add a + or − sign), the 300 mb isotachs can be drawn. The center of the jet is placed between lines where temperatures are equal (on each side). *Subject Headings:* **1. Jet stream analysis 2. Synoptic aerological analysis 3. Isotach analysis 4. Thermal winds.**—*M.R.*

6.2–73 551.509.33

Berkes, Zoltán, **A távidjőelzés kutatásanak kérdése.** [Problems of long-range forecasting research.] *Időjárás*, 58(3):181–182, May/June **1954. MH-BH**—Although the accuracy of long range forecasts in Hungary has been improved recently, its present verification rate of 68.5% for half-month weather forecasts and 58% for half-month anomaly forecasts is still unsatisfactory. A long range forecasting method, in order to be successful, must be based on a thorough knowledge of the mechanism of the general circulation. The zonal circulatory system is composed of the movements of cyclone families. In discussing the general pattern of cyclone activity over Europe, the author finds that the cyclonic postfrontal cold air originates in polar outbreaks presumably triggered by solar corpuscular radiation; the cyclonic warm sector is closely connected with changes in the solar constant. Solar activity thus being mainly responsible for weather changes its accurate prediction should be the primary concern of long range weather forecasters. The author also mentions the correlation existing between phases of the moon and cyclone activity, and attributes it to solar corpuscular radiation reflected by the moon. *Subject Headings:* **1. Long range forecasting 2. Solar influences 3. Lunar influences 4. Hungary.**—*G.T.*

6.2–74 551.509.33:551.524.35(74)

Brooks, Charles F., **Indications for a mild winter in New England.** *American Meteorological Society, Bulletin*, 35(3):132–133, March **1954. MH-BH**—C. F. Brooks' forecast issued over WGBH-FM on Dec. 3, 1953, that the winter 1953–4 would be unusually mild, was verified by Dec. and Feb. temperatures (+6.6 and +7.4°F), respectively. Jan. was 2.8°F below normal. Baur's criteria for forecasting cold or warm winters from Nov. temperature are set forth and it is shown that conditions for a warm winter were fulfilled. Based on 72 years of record, the combinations "invariably" followed by cold winters occurred 11 times and warm winters 12 times. Unusually low pressure in N. Atlantic is thought to persist once established, accounting for the success of these rules. *Subject Headings:* **1. Long range forecasting 2. Winter temperature anomalies 3. Mild winters 4. New England. I. Baur, F.**—*M.R.*

6.2–75 551.509.33:551.524.37(41)

Lawrence, E. N., **The chances of late spring frosts in 1954.** *Weather*, 9(4):113–116, April **1954.** 2 figs., 2 tables, 3 refs. **MH-BH**—Local saying "as many fogs there are in March, so many frosts there will be in May" was tested at S. Farnborough, Hampshire, for ground frosts 1925–49 and a correlation of +0.58 found. Attributed mainly to anticyclonic March weather being foggy and by drying the soil favoring frost later. Correlation between rainfall March+April and frequency of May frosts −0.30. *Subject Heading:* **1. Frost forecasting.**—*C.E.P.B.*

6.2–76 551.509.33:551.583:551.506.7

Matsukura, H., **Discontinuous progress of climate and its forecasting by making use of aerological data.** *Journal of Meteorological Research*, Tokyo, 4(7):426–436, Oct. **1952.** 8 figs., 9 refs. In Japanese; English summary p. (28). **MH-BH**—The author investigates changes in climate by making use of aerological data. The following conclusions are reached: (a) Climate changes discontinuously. (b) Climatic changes frequently occur in connection with one of the following three meteorological situations: (1) anticyclone over the Okhotsk Sea and deep trough over the eastern part of the Asian continent. (2) zonal index showing the tendency to plus sign from spring to summer or minus sign from summer to autumn. (3) maximum height and minimum temperature of tropopause. (c) It would appear that climatic progress is determined by the state of temperature in the upper troposphere and lower stratosphere. *Subject Headings:* **1. Long range forecasting 2. Climatic changes.**—*Author's abstract.*

6.2–77 551.509.33:551.513

Namias, Jerome (*U. S. W. B., Extended Forecast Section*), **General circulation patterns with relation to quantitative analysis of rainfall and temperatures.** (In: Pennsylvania Electric Association. Hydraulic Power Committee, **Symposium on climatic trends in Northeastern United States, April 22–23, 1952, Minutes,** p. 84–91. **Discussion,** *Ibid.*, p. 92–95. 10 figs.) **DWB**—Weather events at any point are not predictable from data for that point, since events

hundreds or even thousands of miles away affect the course of the weather hours or days hence. The basis for medium or long range forecasting must be the general circulation. This lecture describes and illustrates how the large scale circulation over periods of 5 days or a month are determined and forecast for the whole N. Hemisphere, and then how the weather (precipitation and temperature anomalies) is deduced from the circulation patterns as forecast. *Subject Headings:* **1. Circulation patterns 2. Long range forecasting.**—*M.R.*

6.2–78 551.509.33:551.513.7

*Rubin, Morton J., **Investigation of monthly and seasonal weather anomalies of the Southern Hemisphere with special reference to South America.** Weather Services, Inc., Boston, Contract AF 19(604)-449, Scientific Report, No. 2, [1953?] 23 p. 14 figs., 7 tables, 9 refs. **MH-BH**—General circulation patterns in the vicinity of South America are outlined. Lake levels at Lake Titicaca (16°S) and ice conditions at Scotch Bay (62°S) do not show a definite relation to sunspot numbers. Twenty-seven monthly contemporary correlations and 17 monthly lag correlations are computed for temperature, pressure and precipitation parameters at selected places and also for some latitude averages. The periods 1911–40 and 1941–52 in some cases show contradictory results, especially for the lag correlations. Synoptic models are proposed and characteristic monthly pressure distributions with precipitation data are shown. *Subject Headings:* **1. Long range forecasting 2. Circulation patterns 3. Anomalies 4. South America. I. Weather Services, Inc., Boston II. Contract AF 19(604)-449.**—*A.A.*

6.2–79 551.509.33

Sakata, K., **7-day weather forecasting in rainy season by isopleth chart.** *Journal of Meteorological Research,* Tokyo, 4(11):897–901, Feb. **1953.** 5 figs., 5 refs. In Japanese; English summary p. 55–56. **MH-BH**—Using an L-shaped section from E. Kamchatka–Hamada–Saipan, isopleths were drawn on vertical profile to show variations of Okhotsk and Ogasawara highs. From this and development of Bai-u front, author obtains a method of forecasting heavy rain in spring. *Subject Headings:* **1. Extended forecasting 2. Japan.**—*C.E.P.B.*

6.2–80 551.509.33

Seki, K., **A method of extended forecasting.** *Journal of Meteorological Research,* Tokyo, 5(2):71–80, March **1953.** 8 figs., 8 tables, refs. In Japanese; English summary p. 71. **MH-BH**—In this paper the daily weather and the type of the ascent curve of upper air observation are represented by simple code numbers with special reference to the vertical stability and change of 700 mb contour surface. From the time series of these numbers extended forecasts can be prepared for a month ahead by means of extrapolation and composite-period methods. *Subject Headings:* **1. Extended forecasting 2. Objective forecasting.**—*Author's abstract.*

6.2–81 551.509.33/34

Seki, K., **On the locality in long-range forecasting.** *Journal of Meteorological Research,* Tokyo, 4(7):437–443, Oct. **1952.** 13 figs., 4 refs. In Japanese; English summary p. (28). **MH-BH**—Local characteristics of meteorological phenomena have to be given careful consideration in preparing long range forecasts. In this paper local particularities of temperature, precipitation and depth of snow are investigated. It is found that at least two stations (Niigata and Fushiki) have to be considered in order to obtain representative values for Hokuriku district. *Subject Headings:* **1. Long range forecasting 2. Local forecasting 3. Kokuriku District, Japan.**—*Author's abstract.*

6.2–82 551.509.33 551.509.67

Tomorrow's weather. *Fortune,* Chicago, 47(5):144–149, 171–178, May **1953.** photos, illus. (some in color), diagrs. **DWB**—Another comprehensive, semipopular insight into the conflict of opinions between official, scientific and commercial meteorologists in the United States, apparently written by a well-informed person. The main topics are: a) long range forecasts, presenting sample forecasts by NAMIAS, and KRICK, (who claim to be able to make detailed forecasts months in advance) and: b) cloud seeding, discussing the controversy between

LANGMUIR (seven-day periodicities) and the U. S. Weather Bureau, which started careful experiments. Other extreme poles of opinion exist between the electronic prediction method of VON NEUMANN and CHARNEY and the statistical approach of WADSWORTH. *Subject Headings:* **1. Meteorological research 2. Industrial meteorology 3. Cloud seeding 4. Long range forecasting 5. United States.**—*A.A.*

6.2–83 551.509.5:159.928.23

Jenkins, James J. (*Minnesota Univ.*), **Some measured characteristics of Air Force weather forecasters and success in forecasting.** *Journal of Applied Psychology*, Worcester, Mass., 37(6):440–444, Dec. **1953.** 3 tables, 15 refs. **DLC**—A test of 92 Air Force forecasters was made on forecasts of pressure, temperature, precipitation, visibility and ceiling for 5 stations. Each forecaster was assessed for education, mathematical background and forecasting experience and by psychological tests, with a more general population as control. The result showed the forecasters as highly selected in regard to education and clerical, spatial relations and general academic ability. They form part of a "technical skilled-trades interest group with little verbal-linguistic, pure science or social service interest." Among the forecasters success correlated with speed and accuracy in perception. *Subject Headings:* **1. Forecasting skill 2. Psychology.**—*C.E.P.B.*

6.2–84 551.509.5

Lauscher, F. (*Vienna*), **Bindeglieder zwischen synoptic Klima und Mikrometeorologie.** [Connecting links between synoptics, climate and micrometeorology.] *Wetter und Leben*, 5(1/2):52–54, March **1953.** **DWB**—With the aid of a few examples, the author stresses the need for a close relationship between synoptic observations, climatological analyses of weather situation and micrometeorology or local meteorological conditions so as to improve forecasting. *Subject Heading:* **1. Forecast improvement.**—*I.L.D.*

6.2–85 551.509.54:551.594.6

Wittmann, Johann, **Über die prognostische Verwendung von Messungen der atmosphärischen Störungstätigkeit im Längstwellenbereich.** [Practical application of measurements of atmospheric disturbance activity in the region of the longest waves to forecasting.] *Meteorologische Rundschau*, 6(3/4):54–57, March/April **1953.** 3 tables, 8 refs. **MH-BH**—Development and approach of thunderstorms and showers are preceded, generally by several hours, by an increase of disturbances in region 5–12 kHz. These apparently originate in statis discharges and give a measure of instability. They indicate the *possibility* of thunder or showers. *Subject Headings:* **1. Precipitation forecasting 2. Radio noise.**—*C.E.P.B.*

6.2–86 551.509.6(08)

Internationales Symposium über experimentelle Meteorologie in Zürich vom 4. bis 6. Oktober 1954. [International Symposium on Experimental Meteorology in Zurich, Oct. 4–6, 1954.] *Zeitschrift für angewandte Mathematik und Physik*, 5(3):277–278, June 15, **1954.** **DLC**—Announcement of a symposium on natural precipitation and its artificial modification, and especially on the problem of hail formation. The symposium is to be sponsored by the "Eidgenössische Kommission zum Studium der Hagelbildung und der Hagelabwehr" [Swiss Commission for the Study of Hail Formation and Hail Prevention]. A list of proposed speakers is given. *Subject Headings:* **1. Symposia 2. Experimental meteorology 3. Precipitation modification.**—*G.T.*

CLOUD SEEDING

See also: **Report on meteorology,** 6.2–8; **Tomorrow's weather,** 6.2–82; **Periodicities** (Brier), 6.2–260.

6.2–87 551.509.67

Krick, Irving P., **Cloud-seeding operations at Dallas.** *American Water Works Association, Journal*, 45(11):1144–1150, Nov. **1953.** 6 figs., 2 tables, ref. **DLC**—The cloud seeding operation carried out at Dallas extended from Nov. 22, 1952 to May 22, 1953, and involved the operation of ground generators for approximately 870 hours. Precipitation

patterns associated with specific seeding operations are shown diagrammatically and indicate that in one seeding instance one thunderstorm produced as much rainfall as that normally received during an entire month. Data on percentage change in storage June 1 over Jan. 1, 1953 are given. The total precipitation for the period of seeding expressed as a percentage of normal precipitation for the same period was considerably higher in the target area than in the surrounding territory. *Subject Headings:* **1. Cloud seeding 2. Cloud seeding evaluation 3. Dallas, Texas.**—*I.L.D.*

6.2–88 551.509.67:551.574.1:551.579

Krick, Irving P., **Technical and economic aspects of weather modification in relation to water supply.** *Institution of Water Engineers, Journal*, 8(4):336–352, July **1954.** 5 figs., 2 tables. **DWB**—Cloud seeding may increase rainfall from a storm cloud by 50%. It does not interfere with the hydrologic balance, but speeds up the cycle. Statistical proof can only be obtained by prolonged operation. Physics of cloud seeding are described. Temperatures at which various nuclei become operative are set out; AgI is the most practicable. Method of operation is described. Results on winter snowfall in Colorado Rockies and annual rainfall in Rio Alberche region in Spain are favorably assessed. *Subject Headings:* **1. Artificial precipitation 2. Cloud seeding 3. Rio Alberche Region, Spain.**—*C.E.P.B.*

6.2–89 551.509.67

Orville, Howard T. (*U.S.N., retired; Chairman, Advisory Comm. on Weather Control*), **Weather made to order?** *Colliers*, N. Y., 133(11):25–29, May 28, **1954.** illus. (col.), photos., port. **DLC**—An optimistic report on the possibilities of controlling weather for civilian or military purposes by means of cloud seeding techniques developed since 1946, and on the more accurate and specific weather forecasts which may be expected in 10 years if the author's idea of a stepped-up observation and instrumentation program for a close network of stations were carried out. If several billion dollars were spent on research in weather control over 40 years, it would be possible to control drought, hail, thunderstorms, tornadoes, floods, snow, fog, clouds, etc., according to the author. Successes claimed by HOWELL, KRICK and others, in replenishing water supplies for large urban areas, and in putting out forest fires, are also cited. *Subject Headings:* **1. Weather control 2. Cloud seeding.**—*M.R.*

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

STRUCTURE OF THE ATMOSPHERE

See also: **Atmospheric ozone** (Regener), 6.2–10; **Dust content of air** (Khurkhrina), 6.2–59; **Ionospheric wind analysis** (Manning, others), 6.2–227.

6.2–90 551.510

Chapman, Sydney, **Nekotorye iavleniia v verkhnikh sloiakh atmosfery.** [Some phenomena in the upper layers of the atmosphere.] *Voprosy Raketnoĭ Tekhniki*, Moscow, 1(13): 80–89, **1953.** 3 figs., 8 refs. **DLC**—Translation into Russian of article in *Physical Society of London, Proceedings*, Sec. B, 64(382):10, **1951** (*see item* 3.4–93, April 1952, *MAB*). *Subject Headings:* **1. Physics of the atmosphere 2. Atmospheric composition 3. Ionosphere 4. Upper atmosphere 5. Translations.**—*M.R.*

6.2–91 551.510.42:546.22

Alekseeva, M. V. and Samorodina, R. IA., **Kolorimetricheskoe opredelenie soderzhaniia sernistogo gaza v atmosfernom vozdukhe.** [Colorimetric determination of sulfur dioxide content of the atmosphere.] *Gigiena i Sanitariia*, Moscow, No. 10:42–44, Oct. **1953.** 2 tables. **DLC**—The colorimetric method for determining SO_2 content of the atmosphere is based upon the reaction of SO_2 with a fuchsin formaldehyde solution which results in a violet color. A solution of sodium hydroxide was found to be the best absorber of SO_2 gas since it yields stable solutions. Samples of SO_2 can be collected into the absorbing substance by means of a porous glass filter filled with 3 ml 0.01 NaOH in 5% glycerine with a rate of 1.5

liters/min. Nitrogen oxides hinder the determination. *Subject Headings:* **1. Colorimetry 2. Sulphur dioxide in the atmosphere 3. Atmospheric pollution.**—*I.L.D.*

6.2–92 551.510.41:551.508.95:535.243

Broida, Herbert P. and Morgan, Gerry H. (*U. S. Nat. Bureau of Standards*), **Optical spectrophotometric analysis of hydrogen-deuterium mixtures in presence of air.** *Analytical Chemistry*, Wash., D. C., 24(5):799–804, May **1952.** 9 figs., 6 tables, 6 refs. **DLC**—The necessity for rapid, precise analysis of gaseous mixtures of hydrogen, deuterium, and air led to the adoption of optical spectroscopy with photoelectric detection. An electrodeless discharge was used in conjunction with a high resolution photoelectric grating monochromator. This paper describes the system and the problems encountered in calibrating it. Each of the components can be determined to better than 0.1% of the total mixture. The effects on the measured intensities of various experimental conditions are presented. The most striking effects are the small but continuous increase of deuterium-hydrogen line intensity ratio with decreasing pressure and the dependence of this ratio upon Balmer transition. *Subject Headings:* **1. Air sampling and analysis 2. Spectrophotometry.**—*From authors' abstract.*

6.2–93 551.510.41:551.583:661.97

Buch, Kurt (*Helsinki*), **Kolsyra och klimat.** [Carbon dioxide and climate.] *Teknisk Tidskrift*, Stockholm, 81(1):17–19, Jan. 13, **1951.** 3 figs., 7 refs. **DLC**—The influence of carbon dioxide on the current "climatic change" is discussed. CALLENDAR's contribution is reviewed and his curve of the change of surface temperature in relation to carbon dioxide content is presented. Theories as advanced by other workers are touched upon. The significance of carbon dioxide was emphasized at the Oxford Conference in March 1950. *Subject Headings:* **1. Carbon dioxide in the atmosphere 2. Climatic variations.**—*W.N.*

6.2–94 551.510.41

Goldberg, Leo and Müller, Edith A. (*Univ. of Michigan Obs., Ann Arbor, Michigan*), **The vertical distribution of nitrous oxide and methane in the earth's atmosphere.** *Optical Society of America, Journal*, 43(11):1033–1036, Nov. **1953.** 6 figs., foot-refs. **DWB**—The intensities of the atmospheric lines *P*25, *P*26, *P*27, and *P*29 of the 2.16-μ band of N_2O and of the 5–6 line of the 1.66-μ band of CH_4 have been measured in the spectrum of the low-sun observed from Mount Wilson. For both molecules, the rate of change of intensity with solar zenith angle is inconsistent with the existence of these gases in thin layers at altitudes of 15 km or greater. On the other hand, the observations satisfy very well the assumption of uniform mixing with the major constituents of the atmosphere. *Subject Headings:* **1. Vertical nitrous oxide distribution 2. Vertical methane distribution.**—*Authors' abstract.*

6.2–95 551.510.42

Haagen-Smit, A. J. (*Calif. Inst. of Tech., Pasadena, Calif.*), **Chemical analysis of air pollutants.** *U. S. Technical Conference on Air Pollution, Wash., D. C.*, **1950,** *Air Pollution*, p. 193–195. **DLC**—A discussion of the complications introduced in the chemical analysis of air contaminants by the presence of organic compounds in the polluted atmosphere. Particular attention is given to the determination of iodine and the effect of organic compounds upon the liberation of iodine from potassium iodide. *Subject Headings:* **1. Chemical analysis of air 2. Iodine content of air.**—*I.L.D.*

6.2–96 551.510.41:546.17

Harteck, P. and Dondes, S. (*Dept. of Chem., Rensselear Polytech. Inst., Troy, New York*), **Origin of nitrous oxide in the atmosphere.** *Physical Review*, 95(2):320, July 15, **1954.** 7 refs., 6 eqs. **DWB**—The origin of nitrous oxide in the atmosphere is due to the reaction between nitrogen molecules and oxygen atoms formed by the photochemical dissociation of ozone in the atmosphere. The steady state of 5×10^{-7} nitrous oxide in the atmosphere is due to the photochemical equilibrium between nitrous oxide formation and nitrous oxide decomposition, the latter in the upper atmosphere. *Subject Headings:* **1. Nitrous oxide 2. Ozone dissociation.** —*Authors' abstract.*

6.2–97 551.510.41:551.578.11:546.17

Mordy, W. A., **A note on the chemical composition of rainwater.** *Tellus*, Stockholm, 5(4):470–474, Nov. **1953.** 5 figs., 2 tables, 5 refs. **MH-BH**—A limited number of observations of nitrogen, sodium and chloride in rainwater made in Hawaii are presented. Because of frequent and high rainfall, calculations of the annual amounts of nitrogen received in various island localities are rather large. In one storm nitrogen was brought down by rainfall at a nearly constant rate although rainfall intensity varied considerably. In general, the concentrations of these elements in Hawaiian rains agree with observations in other oceanic areas. *Subject Headings:* **1. Chemical composition of rainwater 2. Nitrogen 3. Hawaiian Islands.** —*Author's abstract.*

6.2–98 551.510.41:546.21

Moses, Harry E., **A self consistent calculation of the dissociation of oxygen in the upper atmosphere.** New York Univ. Washington Square College of Arts and Science. Mathematics Research Group, Contract AF 19(122)-463, Research Report, No. CX-2, April **1952.** 14 p. 5 figs., 10 refs., 20 eqs. **DWB**—The dissociation of oxygen is studied under the assumption of number balance for a given equation. In such cases the dissociation region is located at lower altitudes than with radiative energy balance. Graphs show the dissociation probability, recombination cross sections, molecular and atomic number densities. *Subject Headings:* **1. Oxygen dissociation 2. Upper atmosphere. I. New York Univ. Washington Square College of Arts and Science. II. Contract AF 19(122)-463.**—*A.A.*

6.2–99 551.510.41:523.4

Wurm, K. (*Sternwarte Hamburg-Bergedorf*), **Welche Elemente sind in den Planetenatmosphären nachgewiesen?** [Which elements have been found in the planetary atmospheres?] *Umschau*, 54(6):172–173, March 15, **1954.** 2 figs., 2 refs. **DWB**—A brief description of composition of earth's outer atmosphere is given. Infrared spectrum of planets shows powerful absorption by CO_2 on Venus and less powerful on Mars; proportion of O_2 and H_2O is less than 2% that on earth but polar caps of Mars are ice. The large outer planets have methane (CH_4), especially on Uranus and Neptune and ammonia (NH_3), especially on Jupiter, both probably liquid or solid. Water vapor is present, and probably H_2 on Uranus and Neptune. *Subject Heading:* **1. Planetary atmospheres.**—*C.E.P.B.*

6.2–100 551.510.41:523.4

Zerinváry, Szilárd, **A bolygók légköre.** [Planetary atmosphere.] *Időjárás*, 58(1):44–55, Jan./Feb. **1954.** 2 figs. Russian and French summaries p. 44. **MH-BH**—Review of latest findings in astrometeorology. Physical properties identified so far are discussed for each planet separately. *Subject Heading:* **1. Planetary atmospheres.**—*G.T.*

ATMOSPHERIC POLLUTION

See also: **Electron density . . .** (Omholt), 6.2–332; **Ionization distribution** (Piggott), 6.2–333.

6.2–101 551.510.42:551.551

Davies, D. R., **On diffusion from a continuous point source at ground level into a turbulent atmosphere.** *Quarterly Journal of Mechanics and Applied Mathematics*, 7(2):168–178, June **1954.** table, 6 refs., 35 eqs. **DWB**—The 2-dimensional theory of K. L. Calder (1949) is extended to 3 dimensions. A particular solution of the basic diffusion equation is obtained for a uniform continuous fixed point source on a horizontal uniformly rough surface. Applied to neutral stability over long grass it gives:

	Calc.	Obs.
Width of cloud at 100 m	37.0 m	35.0 m
Height of cloud at 100 m	10.5 m	10.0 m
Peak concentration 100 m downwind (mg/m³)	1.75	2.0
Decrease of peak concentration with distance from source	$x^{-1.58}$	$x^{-1.76}$

The theory is applied to evaporation from a limited saturated plane surface, showing that theoretical rate of evaporation per unit length is proportional to w^{1-m}, where w is width and

m is a constant usually $<\frac{1}{2}$, in agreement with observation. *Subject Headings:* **1. Smoke dispersion 2. Turbulent diffusion point source 3. Evaporation theory.**—*C.E.P.B.*

6.2–102 551.510.42:628.53

Falk, L. L.; Chalker, W. R.; Greene, J. A.; Cave, C. B. and Thorngate, C. W., **Development of a system for predicting dispersion from stacks.** *Air Repair*, Pittsburgh, 4(2):35–44, Aug. **1954.** 23 figs., table, 9 eqs. Discussions by STROM, G. H. and HEWSON, E. W., *Ibid.*, p. 43–44. 5 refs. **DWB**—A direct tracer method involving release of easily identifiable fluorescent zinc cadmium sulfide particles is described and results of dispersion measurements obtained with this method are reported. It is found that dispersion patterns can be determined by data obtained with standard wind recorders. The working charts presented permit easy calculation of stack effluent concentrations from wind measurements. *Subject Headings:* **1. Stack effluents 2. Particle dispersion 3. Atmospheric pollution instruments.**—*G.T.*

6.2–103 551.510.42

†*Radcliffe, J. C. and Katz, Morris, **The greater Detroit-Windsor air pollution study. Part I. Industry's part. Part II. Investigation of environmental contaminants by continuous observations and area sampling.** *American Industrial Hygiene Association Quarterly*, 13(4): 206–225, Dec. **1952.** 11 tables, 6 figs., 23 refs. **DLC**—Pt. I gives a report of work of the industrial interests in Detroit area to study and reduce air pollution. Pt. II gives data and describes work of Canadians in this joint (international) undertaking. Weather conditions are shown to play an important role. *Subject Headings:* **1. Atmospheric pollution studies 2. Detroit, Mich. 3. Windsor, Ontario.**—*M.R.*

6.2–104 551.510.42:551.575.1:061.4

Royal Sanitary Institute, London, **Exhibition on smoke and smog. Causes, effects and prevention.** *Royal Sanitary Institute, Journal*, 74(1):72–75, Jan. **1954.** 3 figs. **DLC**—Exhibition at the Institute Nov. 9–Dec. 5, 1953, illustrated measurement, causes and effects of atmospheric pollution, smokeless fuels and other forms of smoke abatement and a working model of smog formation below an inversion. *Subject Heading:* **1. Smog exhibition.**—*C.E.P.B.*

6.2–105 551.510.42:576.8

Silhavy, Friederike, **Untersuchungen des Keimgehaltes der Luft in Wien.** [Investigations on the germ content of the air in Vienna.] *Wetter und Leben*, 6(1/2):16–19, March **1954.** fig., 8 refs. **DWB**—By means of an aspirator similar to that used in determining relative humidity, the author took 650 air samples in Vienna between 0900 and 1100 hours at eleven different points during the course of a year. The relationship between germ content and season and weather was examined. No effect upon germ content by atmospheric pressure and sunshine duration could be shown. The germ content diminished after rain by about 40% of that during fair weather. A considerable fall of temperature reduced germ content by 60%. *Subject Headings:* **1. Aerobiology 2. Vienna, Austria.**—*I.L.D.*

UPPER ATMOSPHERE—IONOSPHERE

6.2–106 551.510.53

The upper atmosphere. *Nature*, London, 174(4425):334–336, Aug. 21, **1954.** **DWB**—Summary of a Symposium on the Upper Atmosphere held by the Royal Meteorological Society at University of Edinburgh, July 15–17, 1954. SIR EDWARD APPLETON described present knowledge of complexity of upper atmosphere. Recent studies on the morphology of the ionosphere revealed departures from simple theory. Research on recombination coefficient is described. IAN C. BROWNE summarized data on air density and ionospheric wind shear obtained from reflection of radio waves from meteor trails. H. P. PALMER described work at Jodrell Bank on fluctuations, attributed to drift of a screen above F2 region, of emissions from Cassiopaea and Cygnus. D. H. JOHNSON described solar tides at 100 mb level. D. H. MCINTOSH discussed possibility of determining ionospheric winds from geomagnetic observations. A. H. JARRETT explained use of multilayer coatings in an interferometer for auroral spectrographs. J. PATON discussed noctilucent clouds, including an observation of

turbulence. *Subject Headings:* **1. Upper atmosphere research 2. Symposia. I. Appleton, Sir E. II. Browne, I. C. III. Palmer, H. P. IV. Johnson, D. H. V. McIntosh, D. H. VI. Jarrett, A. H. VII. Paton, J.**—*C.E.P.B.*

6.2–107 551.510.536:629

Kaplan, Joseph (*Prof. Physics, Calif. U. at Los Angeles*), **This side of infinity.** (In: Ryan, Cornelius, (*ed.*), **Across the space frontier.** N. Y., Viking Press, **1952.** p. 5–11. plate.) **DLC.** Also appeared in condensed form with title: **The air above us,** in *Science Digest,* Chicago, 33(1):24–29, Jan. **1953. DWB**—Current knowledge of the troposphere, ozone layer, acoustical propagation, wind determinations from meteor trails, the ionosphere, aurora and night airglow is summed up in this nontechnical introduction to a well-illustrated book on space travel, satellite observation stations, survival in space, planetary and interplanetary characteristics, etc. KAPLAN defines space as beginning at 120 mi altitude where friction becomes negligible because the air is so thin. *Subject Headings:* **1. Atmospheric structure 2. Interplanetary flights.**—*M.R.*

6.2–108 551.510.536

Ribarič, V. (*Maribor*), **O vanjskoj atmosferi.** [The exosphere.] *Yugoslavia. Hidrometeorološka Služba, Vesnik,* 2(3):97–100, July/Sept. **1953.** In Croatian. **DWB**—The exosphere is defined as a region from which gaseous molecules are capable of escaping into interstellar space. Its limits are not clearly determined. Theories which lead to an approximation of the height of the exosphere are explained in popular terms. The exosphere is assumed to begin somewhere around 800 km. *Subject Heading:* **1. Exosphere.**—*G.T.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

See also: **Null layer effect and jet stream** (Hollmann), 6.2–133; **Heat balance and ablation . . .** (Hoinkes), 6.2–234.

6.2–109 551.511:532.2:550.385

Chandrasekhar, S., **The instability of a layer of fluid heated below and subject to the simultaneous action of a magnetic field and rotation.** *Royal Society of London, Proceedings,* 225(1161):173–184, Aug. 31, **1954.** 2 figs., table, 5 refs., 62 eqs. **DWB**—The paper examines the stability of a horizontal layer of fluid, heated from below, subjected to vertical gravity g, magnetic field H and rotation Ω. When these are parallel the critical Rayleigh number Rc at which convection sets in depends on H and Ω in a very complex way, which is exemplified by the variations in Rc as the magnetic field increases. *Subject Headings:* **1. Instability 2. Magnetic disturbances.**—*C.E.P.B.*

6.2–110 551.511:551.542.1

Di Benedetto, Felice, **Su alcune proprieta notevoli del rotore del vento di gradiente.** [Some remarkable properties of the curl of the gradient wind.] *Annali di Geofisica,* Rome, 6(4):511–532, Oct. **1953.** 9 figs., ref., eqs. Italian and English summaries p. 532. **MH-BH**—With the help of vector analysis, the curl of the gradient wind is expressed as a function of four variables: the "nabla" of latitude, curvature of isobars, temperature and horizontal pressure gradient. For each of these variables the variation of intensity and sign of the curl of the gradient wind is discussed. The curl is then analyzed and determined for special cases and for the jet stream. The results of this analysis show some relevant properties of the curl of the gradient wind, which lead to a better understanding of this important branch of kinematics of the atmosphere. *Subject Headings:* **1. Gradient wind variables 2. Hydrodynamics.**—*Author's abstract.*

6.2–111 551.511:551.55

Hess, Seymour L. and Sherman, Leon, **Comments on Sherman's horizontal-divergence equation.** *Journal of Meteorology,* 11(3):258, June **1954.** ref., 4 eqs. **MH-BH**—Referring to paper by L. SHERMAN (*see item* 4.2–100, Feb. 1953, *MAB*), HESS evaluates terms regarded by SHERMAN as of unknown magnitude. SHERMAN agrees. *Subject Headings:* **1. Divergence 2. Vorticity theory 3. Wind fields.**—*C.E.P.B.*

6.2–112 551.511:551.54

Jansá Guardiola, José María, **El campo arquimediano de la atmósfera.** [The atmosphere as an archimedean field.] *Revista de Geofísica*, Madrid, 12(48):306–339, Oct./Dec. **1953.** 7 figs., 29+ eqs. English summary p. 306. **DLC**—The pressure exerted by the atmosphere on submerged solids is studied as a field of power derived from the pressure considered as a potential. In the state of balance the resultant of the pressures is expressed by the Archimedes principle in its classical form; when the movement of the fluid is quasi-static we can reach a first generalization of this principle; in a general case we must take into consideration the dynamic pressure; thus the field of pressure becomes more complicated, which makes a second generalization of the principle necessary. The results obtained are applied to the problems set by the displacement within the air of rigid bodies and of infinitely dilatable spheres. *Subject Heading:* **1. Dynamics of the atmosphere 2. Atmospheric pressure effects.**—*Author's abstract.*

6.2–113 551.511:551.513.1

Leight, Walter Gilbert (*Extended Forecast Sec., U. S. W. B.*), **Some possible applications of momentum transport theory.** *Journal of Meteorology*, 11(1):10–15, Feb. **1954.** 6 figs., 23 refs., 7 eqs. Also presented as paper at the 112th National meeting of the American Meteorological Society, Pennsylvania State College, Aug. **1951.** 11 p. graphs., 23 refs., eqs. Photostat of typescript. **DWB, MH-BH**—Transport of relative angular momentum across a latitude circle is computed from 5-day mean geostrophic 700 mb winds in 5° strips 30–60°N for tilted troughs over N. Atlantic. Results showed some agreement between changes of wind speed profiles and "700 mb jet" and accumulation of momentum. Not all angular momentum transported into a given area is converted into linear momentum but fairly successful predictions of trends and displacement of 700 mb jet are possible on this basis. *Subject Headings:* **1. Momentum transfer 2. Zonal circulation.**—*C.E.P.B.*

6.2–114 551.511:551.551

Long, Robert R., **Note on Taylor's "ink walls" in a rotating fluid.** *Journal of Meteorology*, 11(3):247–249, June **1954.** 4 figs., 5 refs. **MH-BH**—G. I. Taylor's experiment that ink dropped into rotating water forms thin vertical walls is discussed. It is analogous to the thin sheets of smoke formed in stable air. These were reproduced by injecting ink into a stable salt solution. *Subject Headings:* **1. Stability 2. Wind structure.**—*C.E.P.B.*

6.2–115 551.511

Ludlam, F. H., **Large air bubbles in water.** *Weather*, 9(6):169, June **1954.** 2 photos. **MH-BH**—Photos are shown of air bubbles nearly 2 in. across. They form a spherical cap with a ragged rear edge. Analogies with convection currents are suggested. *Subject Heading:* **1. Convection theory.**—*C.E.P.B.*

6.2–116 551.511:533

McVittie, G. C., **Spherically symmetric solutions of the equations of gas dynamics.** *Royal Society of London, Proceedings*, Ser. A, 220(1142):339–355, Dec. 8, **1953.** 5 refs., 55 eqs. **DWB**—A new method of solution of the equations of gas dynamics is set out in which no restrictive conditions such as adiabatic or isentropic relations are imposed. General solutions are obtained to which boundary and other conditions can be applied piecemeal. *Subject Heading:* **1. Gas dynamics.**—*C.E.P.B.*

6.2–117 551.511:551.551

Malkus, W. V. R., **Discrete transitions in turbulent convection.** *Royal Society of London, Proceedings*, Ser. A, 225(1161):185–195, Aug. 31, **1954.** 3 figs., 2 tables, 12 refs., eqs. Also: **The heat transport and spectrum of thermal turbulence,** *Ibid.*, 196–212. 2 figs., table, 8 refs., 65 eqs. **DWB**—The first paper describes measurements of heat transport and mean velocity in convection in a fluid between horizontal conducting surfaces. Six discrete transitions in the slope of the heat transport curves were observed between Rayleigh numbers of 1700 and 10^6. Visual observations of the fluctuating velocity field are also described. Additional vertical barriers markedly influence the horizontal flow but hardly affect the heat transport. In the second paper the properties of steady-state inhomogeneous turbulent convection of

heat are examined theoretically. An upper limit is found subject to the constraint that some minimum eddy size exists which is effective in heat transport. Relations between boundary conditions and eddy size are investigated and spectra and mean-square values of the fluctuating velocity and temperature fields are estimated. The discrete transitions are within the error limits of the observations but further data are required to justify the use of minimum eddy size as a defining parameter in situations of geophysical scale. *Subject Heading:* **1. Turbulent exchange.**—*From author's abstracts.*

6.2–118 551.511:551.551:551.507.3

Moore, C. B.; Smith, J. R. and Gaalswyk, A., **On the use of constant-level balloons to measure horizontal motions in the atmosphere.** *Journal of Meteorology*, 11(3):167–172, June **1954.** 7 figs., table, 10 refs. **MH-BH**—"Skyhook" balloons were tested as the best method of tracing airflow. Trajectories (exceeding 1000 mi at 300 mb) of balloons launched at Ogden, Utah, and tracked by aircraft are compared with forecasts and tracks computed from upper air data. A number of simultaneous flights of balloons set for 300 mb are described; the mean separation was only 0.08 to 2.3% of distance and the mean horizontal coefficient of eddy diffusion calculated as 3.6×10^7 cm²/sec. *Subject Headings:* **1. Constant level balloons 2. Skyhook balloons 3. Eddy diffusion.**—*C.E.P.B.*

6.2–119 551.511:551.524.1

*Nagabhushana Rao, K., **Equivalent and equivalent potential temperatures.** *India. Meteorological Dept., Memoirs*, 29(5):173–229, **1953.** 8 tables, 21 refs., eqs. Errata laid in. **DWB**—In recent years several papers relating to Equivalent and Equivalent Potential Temperatures have been published. It is known that considerable differences exist among these derivations. Most of them are based on a number of approximations which need closer examination. The paper consists of nine sections. The first one which is the introduction, summarizes the main contributions to the subject. In the second, general expressions for Equivalent and Equivalent Potential Temperatures corresponding to any values of pressure Temperature and Relative Humidity (or mixing ratio) are derived. Section three deals with the evaluation of $\frac{Le^z}{273\ Cp}\ 273$ which occurs in the expressions for E.T. and E.P.T. In section four and five, the differences in E.P.T. due to different approximations and comparison with Rossby's expressions are considered. The order of the differences is also indicated. Sections six and seven deal with the relation between E.P.T., W.B. Temperature and Entropy. In section eight the method of calculation of E.P.T. tables is explained. All the main tables referred to in the paper are included in the last section of the paper. *Subject Headings:* **1. Equivalent temperatures 2. Equivalent potential temperature.**—*Author's abstract.*

6.2–120 551.511:551.513

Neuwirth, R., **Die Anwendung der horizontalen Scherzahlen ("Scherungsvorticity") in synoptischen, biometeorologischen und Strahlungs-Untersuchungen.** [The application of horizontal shear values (shear vorticity) in synoptic, biometeorological and radiation investigations.] *Meteorologische Rundschau*, 7(5/6):88–92, May/June **1954.** 6 figs., 19 refs. **DWB**—The shear vorticity figure *SZh* is defined and its applications described. In synoptic meteorology *SZh* and static lability at 5 and 9 km are correlated (by *n*-method) with cloudiness, occurrence of thunder and beginning of rain spells. In biometeorology a relation between *SZh* and blood coagulation is quoted and in austausch and radiation studies, relations to surface ozone and turbidity. *Subject Heading:* **1. Shear vorticity.**—*C.E.P.B.*

6.2–121 551.511:551.513.1:551.555

Rogers, M. H., **The forced flow of a thin layer of viscous fluid on a rotating sphere.** *Royal Society of London, Proceedings*, Ser. A, 224(1157):192–208, June 22, **1954.** 6 figs., 4 tables, 7 refs., 62 eqs. **DWB**—The steady zonal velocity field in a fluid analogous to a simplified atmosphere is computed. A region of descending air (about 1 cm/sec) is centered in 25°N with ascent south of 18°N. Meridional flow is north to south between 90 and 15°N and south to north south of 15°N. Zonal velocity is west to east north of 10–15°N and east to west in lower latitudes, corresponding with trade winds. These east winds arise from nonlinear terms which are negligible in higher latitudes. They can only be maintained by some process

of eddy transport of momentum. *Subject Headings:* **1. Zonal circulation 2. Trade wind theory.**—*C.E.P.B.*

6.2–122 551.511:551.558.1

Sutton, O. G. (*Military Coll. of Sci., Shrivenham, Eng.*), **The problem of dispersion of hot gases in the atmosphere.** *U. S. Technical Conference on Air Pollution, Wash., D. C.*, **1950,** *Air Pollution*, p. 793–801. 7 figs., 3 tables, 5 refs. **DLC**—The dynamics of a jet of hot gas in a gravitational field is treated on the assumption that "the entrainment process implied in the formation of a vertical jet involves turbulence of the usual dynamic type the effects of which can be expressed by a suitable mixing length." The solutions presented are based upon the conception that for a small temperature difference the speed of a stream of hot gas closely resembles the diffusion of a cloud of cold smoke in the atmosphere; however "in the convection problem the 'wind' is the velocity of natural convection and therefore decays to zero with excess temperature in the jet." The author develops the continuous point source expression and compares experimental data on the temperature and velocity of a column of air issuing from a heat source in a calm atmosphere with his theory and finds reasonable agreement. A first approximation to the solution of the problem of the behavior of a heat jet in a horizontal wind is presented. It involves the calculation of the "trajectory of a particle subjected to a constant horizontal velocity and an upward velocity which decays with distance along the trajectory according to the laws established" by the author for convective velocity in a free jet. *Subject Headings:* **1. Energy dispersion 2. Vertical currents.**—*I.L.D.*

6.2–123 532.5 551.511

Tollert, Hans, **Die Wirkung der MAGNUS-Kraft auf sedimentierende Teilchenschüttungen sowie auf laminar strömende Lösungen und Gasgemische.** [The effect of the Magnus force on sediments of particles, solutions and gas mixtures.] *Naturwissenschaften*, 41(12): 277–278, June **1954.** fig., 7 refs., 8 eqs. **DLC**—Spherical particles in liquids and air with a radial velocity gradient tend to concentrate where velocity is greatest. The cause of this is analyzed. A similar concentration is found in molecular and electrolytic solutions. In whirling air with a temperature gradient, a small excess of oxygen was found in the closed (cold) end compared with the open end. *Subject Headings:* **1. Dynamic stability 2. Hydrodynamics.**—*C.E.P.B.*

6.2–124 551.511:551.513.1

Vuorela, Lauri A. (*Stockholm Univ.*), **A synoptic study of deformation fields.** *Tellus*, Stockholm, 5(3):413–419, Aug. **1953.** 6 figs., 2 refs., 19 eqs. **MH-BH**—The horizontal deformation has been computed for a set of grid points (in the North Atlantic and Northwest Europe) for 4 pairs of 500 mb charts. Two (Nov. 4, 1951, 03 h and 15 h, and Dec. 5, 1951, 15 h and Dec. 6, 1951, 03 h GMT) show situations where the barotropic tendency computation was successful (correlation coefficient between observed and computed tendencies was 0.81 and 0.79, respectively). The two other pairs, Nov. 14–15, 1951 and Dec. 2–3, 1951, are situations where the computations failed (coefficient 0.06 and 0.13, respectively). No essential difference could be found between cases which succeeded and those which failed. Theory, method of computation and an analysis of anomalies and failures is presented. It is concluded that the geostrophic assumption leads in many cases to too large deformations. *Subject Headings:* **1. Synoptic analysis 2. Deformation fields.**—*M.R.*

GENERAL CIRCULATION

See also: **Jet stream analysis** (McClellan), 6.2–72; **General circulation patterns** (Namias), 6.2–77; **Weather anomalies** (Rubin), 6.2–78; **Momentum transfer theory** (Leight), 6.2–113; **Shear vorticity** (Neuwirth), 6.2–120; **Flow of viscous fluid on a rotating sphere** (Rogers), 6.2–121; **Deformation fields** (Vuorela), 6.2–124; **Quasi-periodic cyclogenesis** (Namias), 6.2–147.

6.2–125 551.513

Scorer, R. S., **Calculations with a difference.** *Weather*, 9(7):219, July **1954.** **MH-BH**—Discussion of relations of movements of locust swarms to winds, use of electronic computers, etc. *Subject Heading:* **1. Atmospheric circulation.**—*C.E.P.B.*

6.2–126 551.513.1

Winston, Jay S. (*Extended Forecast Sec., U. S. W. B., Wash., D. C.*), **The weather and circulation of December 1953. A month of fast westerly flow.** *Monthly Weather Review*, 81(12):392–296, Dec. **1953.** 4 figs., 2 refs. **MH-BH**—The Northern Hemisphere mean charts presented show that the wind speed at 700 mb was above normal in a belt extending across the Pacific to the western and even central U. S. and across the N. Atlantic at 40°–55°N, storminess in and north of this region was above normal, rainfall was above normal in the northern stormy belt and below normal in the central and southern parts of the U. S.; temperatures were above normal across the northern states and subnormal in the south. *Subject Headings:* **1. Atmospheric circulation anomalies 2. Temperature anomalies 3. Monthly weather reports 4. United States.**—*M.R.*

6.2–127 551.513.2:551.557

Bannon, J. K., **Note on the subtropical jet stream in January and April 1951.** *Meteorological Magazine*, London, 83(987):257–263, Sept. **1954.** 4 figs., 4 tables, 14 refs. **DWB**—Winds at 300 mb and above in Hawaiian area and West Indies in Jan. and April 1951 and at Dakar in Jan. are examined for occasions of jet stream (SSW–NW). Mean maximum speed 66–83 kt at about 40,000 ft; strong vertical shear began about 25,000 ft. The jet stream over N. Pacific is plotted on 500 mb contours and temperatures on Jan. 13 and April 23, showing that it is distinct from polar front jet. *Subject Heading:* **1. Jet stream.**—*C.E.P.B.*

6.2–128 629.13:551.513.2:551.557(261)

Davis, N. E., **A successful transatlantic crossing in a jet stream.** *Meteorological Magazine*, London, 83(987):268–271, Sept. **1954.** 3 figs., 2 refs. **DWB**—A BOAC Stratocruiser left New York 2114 GMT Aug. 2, 1953 and reached London 0828 Aug. 3, having had a tail wind of nearly 100 kt for over 1000 miles at 21,000 ft. Charts show 500 and 300 mb contours, aircraft track and weather. *Subject Headings:* **1. Jet stream 2. Upper air flights 3. North Atlantic.**—*C.E.P.B.*

6.2–129 551.513.2:551.557

Dursi Moreau, Edgardo V., **Corriente de "chorro."** [Jet stream.] *Revista Nacional de Aeronautica*, Buenos Aires, 14(145):54–55, April **1954.** 2 figs., 3 refs. **DWB**—A general discussion of the jet stream as revealed on cross sections (Havana-Thule-Greenland) on 500 mb charts (N. Hemisphere) and in studies made at the Univ. of Chicago (Cressman, Hess, Fultz, Rossby and Starr) and articles by McTaggart-Cowan in Canada, Hovmoller for Europe and others, and with particular reference to use of knowledge thus gained in aviation. The Spanish term Corriente de "Chorro" corresponds to Italian "Corrente a getto," as used by Bilancini (*see item* 2.9–75, Sept. 1951, *MAB*). *Subject Headings:* **1. Jet stream 2. Cross sections 3. Terminology.**—*M.R.*

6.2–130 551.513.2:551.557

Faust, Heinrich, **Die Strahlströme als Erscheinungen der Nullschicht.** [The jet streams as phenomena of the null layer.] *Meteorologische Rundschau*, 7(9/10):161–166, Sept./Oct. **1954.** 5 figs., 23 refs. **DWB**—Cases in Germany with and without a marked wind maximum near 225 mb are examined, and show that in the former the winds are usually supergradient as in the jet stream. This is the level of non-divergence (null layer) in which vertical movement is zero and flow is ageostrophic from low to high pressure. There is a clear discontinuity between this layer and the vertical and ageostrophic circulation below it. The jet stream is based on a system of deep pressure systems and the planetary west drift. The energy is derived from the horizontal pressure gradient in the null layer, which also accounts for the crowding of the isohypses. *Subject Heading:* **1. Jet stream 2. Null layer.**—*C.E.P.B.*

6.2–131 551.513.2:551.557

Harding, Edwin T. (*U. S. Navy Asst. Officer in Charge, Project AROWA*), **Jet stream research in the Navy.** *Weatherwise*, 7(1):3–6, Feb. **1954.** illus. **MH-BH**—Two U. S. Navy "Skyknight" jet fighters based at Patuxent, Md., have been assigned to make daily flights across the jet stream (and sometimes even along it) during the 1953–54 season. Other projects

the Navy has undertaken or is undertaking such as the AROWA (Applied Research; Operational Weather Analysis) jet stream project (and its report "The Jet Stream") and the Pan American AROWA contract to study the jet stream in the Pacific and to develop a preliminary method of forecasting the Pacific Jet stream are described. *Subject Headings:* **1. Jet stream research 2. Pacific jet stream 3. Project AROWA 4. Jet stream forecasting.**—*M.R.*

6.2–132 551.513.2:551.557:551.515.8

Hille, Alfréd, **Futóáramlások és magassági frontális zónák.** [Jet streams and frontal zones in the upper air.] *Időjárás*, 58(2):90–95, March/April **1954.** 3 figs., 6 refs. Russian and English summaries p. 90. **MH-BH**—Jet streams and frontal zones of the upper air may be considered as outstanding problems of meteorological research today. The author reviews the present state of knowledge on the subject, emphasizing the connection between the two phenomena. *Subject Headings:* **1. Jet stream 2. Frontal zones.**—*Author's abstract.*

6.2–133 551.513.2:551.557 551.511

Hollmann, G., **Zur Frage des Nullschichteffekts und der Strahlströme.** [On the null layer effect and the jet stream.] *Meteorologische Rundschau*, 7(9/10):166–170, Sept./Oct. **1954.** fig., 10 refs., 30 eqs. **DWB**—The hypergeostrophic null layer effect found empirically by H. Faust (*see item* 6.2–130 *above*) with an ageostrophic wind against the pressure gradient, is examined theoretically. It is shown that integrating the energy flow in the null layer over time and space gives a convergence of the vertical flow of kinetic energy of horizontal motion. As the upward flow in cyclones gives more energy than the downward flow in anticyclones, there is on balance an upward flow of energy which falls to zero in the null layer and is converted into a flow against the pressure gradient. Thermodynamical considerations show that the upper troposphere is a convergence region for kinetic and potential energy and enthalpy. *Subject Headings:* **1. Jet stream 2. Energy transport.**—*From author's abstract.*

6.2–134 551.513.2:551.557

"Jet stream" under study. *Current Science*, Calcutta, 22(5):135, May **1953. DWB**—Vincent J. Schaeffer's method of jet stream location is briefly described. The method is based on "carefully coordinated observation of cloud formations by weather stations located in different parts of a country." The clouds indicating the presence of jet stream are arranged in parallel waves normal to the air flow. *Subject Heading:* **1. Jet stream clouds. I. Schaeffer, V. J.**—*G.T.*

6.2–135 551.513.2:551.557(08)

Jet stream variations. *Aeroplane*, London, 86(2223):228, Feb. 26, **1954. DLC**—Report of papers read and discussion on jet stream and general circulation on Feb. 7, at Royal Meteorological Society meeting. J. Smagorinsky of U. S. W. B., Wash., D. C., gave a paper on contrasts between land and sea. *Subject Headings:* **1. Jet stream symposia 2. General circulation. I. Smagorinsky, Joseph.**—*M.R.*

6.2–136 551.513.2:551.557:629.13

§Riehl, H. and Maynard, H., **Exploration of the jet stream by aircraft during the winter of 1953.** Chicago. Univ. Dept. of Meteorology, Contract N189s-88360, *Final Report*, April **1954.** 58 p. 16 figs., 13 refs., append. **DWB**—Wind, temperature and turbulence data are given in detail on graphs, charts and tables, for 5 specific flights (Feb. 19 to March 23, 1953) made by 2 jet aircraft from Patuxent, Md. to the Great Lakes region. Surface and upper air synoptic and isotach charts show jet stream areas which were crossed by these flights. One flight, from Charleston, S. C., to Pittsburgh via Patuxent, showed measured wind speed of 275 mph. over 28 mi of flight. *Subject Headings:* **1. Jet stream flights 2. Extreme wind speeds aloft 3. Jet stream analysis 4. Eastern United States. I. Chicago. Univ. Dept. of Meteorology II. Contract N189s-88360.**—*M.R.*

6.2–137 551.513.2:551.557:551.576.1

Tillotson, K. C. and Colson, DeVer, **Wave-cloud formation at Denver.** *Weatherwise*, 7(2):34–35, April **1954.** figs., **MH-BH**—A most peculiar pencil shaped jet stream cloud

photograph is shown and described. A series of breaking waves, oriented along the axis of the CiCu cloud, which was present along the foothills of the Rockies near Denver at 1735 MST in Feb. 14, 1953 are clearly shown in the photograph. All who observed the formation agreed that it was of very short duration and it was thought to be due to extreme instability and shear at a time when the wind was increasing from 78 knots (0200) to 200 knots (2000 MST) at tropopause (36,000 ft). At that time the jet stream lay over Denver and was oriented the same (NNW SSE) as the cloud. *Subject Headings:* **1. Jet stream clouds 2. Shearing in clouds 3. Denver, Colo.**—*M.R.*

6.2–138 551.513.2(99)

Mirrlees, S. T. A., **Notes on Southern-Hemisphere circulation.** *Meteorological Magazine*, London, 83(980):33–37, Feb. **1954.** 4 figs., 4 tables, 10 refs. **MH-BH**—Pre-war surface pressure charts for S. American sector of Antarctic and southern S. America are classified into 4 high index and 3 low index types and analyzed for seasonal trend and other variations. *Subject Headings:* **1. Zonal circulation 2. Antarctica.**—*C.E.P.B.*

6.2–139 551.513.7:551.509.33

Willett, H. C. and Bodurtha, Frank T., Jr. (*M. I. T.*), **An abbreviated southern oscillation.** *American Meteorological Society, Bulletin*, 33(10):429–430, Dec. **1952.** table, 5 refs. **MH-BH**—An abbreviated southern oscillation is formulated which correlates highly with Walker's complete southern oscillation. With the abbreviated southern oscillation the high lag correlation coefficient of the southern oscillation from June–Aug. to the following Dec.–Feb. is verified with data for the additional decade, 1931–1940. The lag correlation coefficient between the June–Aug. abbreviated southern oscillation and the following winter temperature of Southwest Canada is −0.57. *Subject Headings:* **1. Seasonal forecasting 2. Southern oscillation.**—*Authors' abstract.*

ATMOSPHERIC DISTURBANCES

See also: **Wind effects on shallow water** (Kivisild), 6.2-9; **Jet streams and frontal zones** (Hille), 6.2-132; **Windspout** (Makhover), 6.2–210; **Mountain Cu** (Tucker), 6.2-257.

6.2–140 551.515.1:551.515.7

Faust, Heinrich, **Warum gibt es mehr Tief- als Hochdruckgebiete?** [Why are there more lows than highs?] *Meteorologische Rundschau*, 6(9/10):182–185, Sept./Oct. **1953.** 5 figs., tables. **DLC**—A count of closed high and low pressure areas in 1952 showed ratio highs/lows 0.63 at M.S.L., decreasing to 0.48 at 500 mb. Difference greater over land than sea. Total number greater over land than sea due to closer network, relief and smaller scale. Difference highs-lows attributed to oppositely directed centrifugal force in highs and lows and weaker gradients in highs. *Subject Headings:* **1. Barometric depressions 2. Anticyclones.**—*C.E.P.B.*

6.2–141 551.515.1(261.2)

§Hay, R. F. M. and Laing, J., **The storm of 31st January–1st February, 1953.** *Marine Observer*, 24(164):87–91, April **1954.** 4 figs., photo. **MH-BH**—Account of widespread NW and N gales in North Sea and analysis of depression which caused them. Several ships were lost and wave heights of 30 ft were reported. This was the storm which caused widespread flooding on coasts of Holland and E. Britain. *Subject Headings:* **1. Extratropical cyclones 2. North Sea storm (Feb. 1953) 3. North Sea.**—*C.E.P.B.*

6.2–142 551.515.1

§Rodewald, M., **Trog und Tröge.** [Trough and troughs.] *Wetterlotse*, Hamburg, 63/64: 209–214, Nov./Dec. **1953.** 5 figs. **DWB**—Definitions with synoptic illustrations of trough (mostly behind a cold front or occlusion), trough axis, trough line, trough storm, high level trough, etc. Their occurrence and associated weather are described. *Subject Heading:* **1. Troughs.**—*C.E.P.B.*

6.2–143 551.515.11:551.554

§John, Horst, **Über den Aufbau und die Entwicklung von Kaltlufttropfen. Untersuchungen auf der Grundlage des Vertikalwindfeldes.** [The structure and development of upper cold lows. Investigations on the basis of vertical wind fields.] *Leipzig. Universität. Geophysicalisches Institut, Veröffentlichungen, Ser. 2,* 16(3):219–315, **1953.** 32 charts, 20 figs., 16 refs. **DWB**—The literature on "Kaltlufttropfen" is reviewed. At first the term applied to any cold low cut off from its parent Arctic air mass (Exner, 1923), later (1947–48) the concept became more restricted, applying only to closed cyclonic systems evident on upper level charts of baric topography without necessarily appearing as "lows" on the surface charts. The relation to steering, the dynamic conditions as evidenced by cross sections and vertical velocity fields, both for individual cases and as mean (statistically) conditions and, finally, the temperature, tropopause height, cloudiness, precipitation, mass exchange, advection, convection, radiation, and trajectories of air particles and masses are taken up systematically in this monograph. *Subject Headings:* **1. Cold lows aloft 2. Synoptic aerological studies 3. Vertical wind fields.**—*M.R.*

6.2–144 551.515.11:551.509.3

§Kibler, Clarence L. and Robinson, Earl F. (*WBAN Analysis Center, U. S. W. B., Wash., D. C.*), **Cyclogenesis aloft over southwestern United States October 17–22, 1953.** *Monthly Weather Review,* 81(10):342–347, Oct. **1953.** 11 figs., 8 refs. **DWB**—In addition to the customary surface and 500-mb charts, this synoptic study of pressure development includes a time cross section for Las Vegas, Nev. The cross section shows isotherms, 24-hour temperature rises, temperature falls, zero temperature change lines, fronts and tropopauses from 1000 to 70 mb, Oct. 18–23, 1953. The authors suggest that such cross sections for key stations "might aid in getting a better picture of changes occurring." *Subject Headings:* **1. Cyclogenesis 2. High level cyclones 3. Synoptic analysis 4. Cross sections 5. Southwest United States.** —*G.T.*

6.2–145 551.515.11

§Lowndes, C. A. S., **Mobile depression with an unusual thermal structure.** *Meteorological Magazine,* London, 83(980):40–44, Feb. **1954.** 6 figs. **MH-BH**—A normal depression which formed near Greenland on Oct. 4, 1952, developed a well marked cold trough in phase with the center, but did not become stationary or fill up. After a period of erratic motion it continued SE with little change of pressure at the center. Development, shown by surface charts and thickness lines, is related to non-advectional warming and cooling as well as ageostrophic advection of cold air towards the center, especially in 500–300 mb layer. *Subject Heading:* **1. Cyclone structure.**—*C.E.P.B.*

6.2–146 551.515.11:378:778.5

Mügge, Ratje, **Zyklonenbildung auf der Wetterkarte.** [Cyclogenesis as shown on the weather map.] Frankfurt a.M., Institut für Meteorologie und Geophysik der Universität, **1953.** 26 p. charts. For use with: Göttingen. Institut für Film und Bild in Wissenschaft und Unterricht, **Hochschulfilm** C581/1951. **DWB**—Details of a film, which shows changes in the synoptic pattern over Europe during a five-day period by means of animated weather charts, are explained and illustrated. The situation represented involves a westerly circulation zone from which a cyclone develops (Nov. 30–Dec. 4, 1935). The film was prepared for use in college courses. *Subject Headings:* **1. Cyclogenesis 2. Synoptic studies 3. Educational films 4. Teaching of meteorology 5. Meteorological films.**—*G.T.*

6.2–147 551.515.11:517.512.2:551.513

Namias, Jerome (*U. S. W. B., Wash., D. C.*), **Quasi-periodic cyclogenesis in relation to the general circulation.** *Tellus,* 6(1):8–22, Feb. **1954.** 16 figs., 10 refs. **MH-BH**—A striking case of recurring cyclogenesis at ten day intervals during Feb. 1953 with a tendency to continue until mid-May has been studied against the background of the planetary circulation averaged over periods up to thirty days. The data suggest a periodicity-producing mechanism whose period may be defined by the underlying long period (e.g., 30-day) midtropospheric wave pattern. In this particular case the patterns of waves observed on 5-day mean charts

oscillated about certain more stable centers of action in a manner consistent with vorticity considerations. These oscillations recurrently deployed continental polar and maritime tropical air masses into juxtaposition and set the stage for cyclone growth. The movement and development of these cyclones strengthened the westerlies, thereby temporarily permitting increase of the planetary wave length. After the energy of thermal contrast was tapped and the cyclones moved off or filled, the regional westerlies declined leading to long wave retrogression and the initiation of the cycle anew. The annoying "change in phase" which has beset workers in periodicity for years is shown to be associated with abrupt though logical rearrangements of the mean planetary circulation incident to change of season. *Subject Headings:* **1. Cyclogenesis periodicities 2. Planetary circulation.**—*Author's abstract.*

6.2–148 551.551.11

§Sanders, Frederick (*M.I.T.*), **A period of strong cyclonic activity in the North Atlantic.** U. S. Weather Bureau, May **1948.** 5 p. numerous charts (fold.). Carbon of typescript. **DWB**—This report is an excellent example of a synoptic study for an area (the N. Atlantic) during a period when a very critical situation developed with respect to bad flying weather. The development of 4 cyclones occurred between Feb. 6 and 10, 1948, starting with a new LOW which formed in the cold air moving over the warm waters off the coast of North Carolina on Feb. 6. These storms are usually frontless at first and develop very rapidly, moving in a variety of manners which are usually considered as "unorthodox," hence similar situations may deceive forecasters several times each winter. The dynamic or thermodynamic causes of the cyclogenesis are explained for each case and the series illustrated by 6 hourly surface charts for Feb. 6-10, 1948. *Subject Headings:* **1. Synoptic studies 2. Cyclogenesis 3. North Atlantic.**—*M.R.*

6.2–149 551.515.11:551.509.311

Stark, L. P. and Richter, D. A. (*U. S. W. B., Wash., D. C.*), **Cyclogenesis in the Gulf States, January 1954.** *Monthly Weather Review,* 82(1):35-41, Jan. **1954.** 16 figs., 11 refs. **MH-BH**—Analysis of 3 cases of cyclogenesis in Louisiana or Gulf States region on Jan. 10, 15 and 21, 1954, respectively. In all 3 cases the cyclogenesis occurred on the stationary front of a powerful outbreak of Arctic air from Canada over the plains. Various regularities are noted as being useful for forecasting such occurrences, among them being the fact that a 500 mb cold LOW or trough was located over the SW United States 24 hours before the cyclogenesis in every case. The combination of cold air injection at 850 mb and a thickness increase (1000–500 mb) resulted in surface pressure falls. A combination of J. J. GEORGE's (1953) method and thickness considerations is recommended for pre-forecast analysis. *Subject Headings:* **1. Cyclogenesis 2. Polar outbreaks 3. Cyclone forecasting 4. Gulf of Mexico. I. George, J. J.**—*M.R.*

6.2–150 551.515.11

Starr, Victor P., **Some aspects of the dynamics of cyclones.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers,* No. 24:9–17, Nov. **1953.** fig., 6 refs., eqs. *AFCRC Technical Report* 53–35. **DWB, DLC**—The angular momentum equation for a cyclonic disturbance is examined. It is found that the increase of this momentum in a given region during the onset of an extratropical cyclone is due mainly to a flux of such momentum into the region from the environment. A synoptic example is included. *Subject Headings:* **1. Cyclone dynamics 2. Angular momentum.**—*Author's abstract.*

6.2–151 551.515.127

Abdullah, Abdul J., **A note on the tilted-trough model.** *Journal of Meteorology,* 11(3):249–253, June **1954.** 3 figs., 5 refs., 31 eqs. **MH-BH**—A mathematical analysis leads to a formal derivation of linearized equations of the tilted trough model. L. MACHTA's solution (1949) is extended to provide for meridional variations of the amplitude. The solutions provide for meridional transport of momentum. *Subject Heading:* **1. Upper level troughs.**—*C.E.P.B.*

6.2–152 551.515.2(267)

Viviès, P. de Martin de, **Nomenclature des cyclones ressentis a L'Île de la Réunion (Bourbon) despuis 1655.** [Catalog of cyclones experienced at Réunion Island (Bourbon)

since 1655.] *La Météorologie, 4th Ser.*, No. 11:229–240, July/Sept. 1948. 13 refs. **DWB**—A catalog of over 180 tropical cyclones which passed near Réunion Island from 1655-1948, including reports of damage done and meteorological conditions attending many of them. Most (80%) of the storms occurred in Jan., Feb. and March (45 in Jan., 53 in Feb., 41 in March and almost none between June and Nov.). *Subject Headings:* **1. Tropical cyclones 2. Hurricane damage 3. Long period records 4. Réunion Island 5. Indian Ocean.**—*M.R.*

6.2–153 551.515.31

Rossman, Fritz O. (*Air Force Missile Test Center, Patrick AFB, Florida*), **Physical processes in the development of tornadoes and consequences which influence their dissipation.** Miami, Florida, Pan American World Airways, Latin American Division, March 4, **1954.** 7 p. 4 figs., eqs. **DWB**—Criteria determining both the origin of tornadoes and their dynamic forces are developed through physical insight and computation of their wind speeds. The physical theory is founded on numerous observations of specific cases both in Europe and in the United States where, in recent years, an unusually large number of tornadoes occurred. It will be demonstrated that there is no updraft in the funnel of a tornado, as is generally assumed, but that there is a strong downdraft caused by moist labile conditions and stabilized by the revolving motion of the air mass in the tornado funnel. This seems to present the only way to evolve a theory of tornadoes without finding any contradictions in conditions and facts characterizing the shape and destructive powers of tornadoes anywhere in the world. *Subject Headings:* **1. Tornado dynamics 2. Tornado formation 3. Tornado theories.**—*Author's abstract.*

6.2–154 550.342:551.465 551.515.8

Donn, William L. (*Brooklyn College, Brooklyn*), **A comparison of microseisms and ocean waves recorded in southern New England.** *American Geophysical Union, Transactions*, 34(3):471–476, June **1953.** 7 figs., 2 tables, 8 refs. **DWB**—Very high coastal waves, recorded at Woods Hole, for which there were no concurrent meteorological storms in the critical ocean area, caused only slight microseismic disturbances, while an intense microseismic storm was generated by a cold air mass moving offshore. Pressure fluctuations in this air mass are probably the generating mechanism. The study presents seismograms, wave records and synoptic charts. *Subject Headings:* **1. Microseisms 2. Ocean waves 3. Cold fronts 4. New England.**—*A.A.*

RADIATION AND TEMPERATURE

RADIATION

See also: **Radiation theory** (Heitler), 6.2–4; **Radiation charts** (Yamamoto), 6.2–31; **U-V radiation** (Nigeria), 6.2–52; **Radiation balance . . .** (Wexler), 6.2–303; **Sky polarization** (Wörner), 6.2–331.

6.2–155 551.521:016

†Eppley, Marion and Karoli, Alton R. (*Eppley Foundation for Res., Newport, R. I.*), **Use of wave number in radiation formulas.** *Optical Society of America, Journal*, 43(11):957–959, Nov. **1953.** 3 figs., refs., 8 eqs., append. **DWB**—A brief discussion showing the significance of substituting wave number for wavelength in the radiation formulas is presented. Expressions for the corollaries of the Wien displacement law are given as well as energy curves based on the Planck equation. A straight line relationship is shown to exist between temperature and wave number at maximum energy. An appendix contains a bibliography on blackbody radiation since 1930. *Subject Headings:* **1. Radiation formulas 2. Radiation bibliographies.**—*Authors' abstract.*

6.2–156 551.521

Möller, Fritz, **Radiation processes near the surface of the earth.** N. Y. Univ. College of Engineering. Research Div., Contract AF 19(122)-165, Scientific Report, No. 2, Feb. **1954.** fig., 3 tables, 14 refs. **MH-BH**—Radiational temperature changes in the layer of air near the ground are computed for each hour of the day from observations taken during the

spring (1952) at Seabrook, New Jersey. It was found that at the ground the air cools at a maximum rate of about 26 C hour^{-1} during the night. At 10 cm this cooling and warming pattern is reversed and smaller than at the ground. By 6.5 meters, the radiational temperature changes are reduced to about +1.4 C hour^{-1} and −1.4 C hour^{-1} during the day and night, respectively. In the study of the heat balance of the surface layer of air, the variation with height of the vertical heat transport by turbulent mixing was computed as a function of the net radiation balance at the ground, the heat lost due to evaporation and conduction, the net radiation flux in the air and the observed local temperature change. The derived exchange coefficient varied from 1.94×10^{-3} gm cm^{-1} sec^{-1} at $z=0$ to 136 gm cm^{-1} sec^{-1} at $z=6.4$ m during the afternoon, and from 1.5×10^{-3} gm cm^{-1} sec^{-1} at $z=0$ to 2.6 gm cm^{-1} sec^{-1} at $z=6.4$ m during the night. It is shown that radiation processes are negligible as modes of heat transfer in the layer of air near the ground (0–6.5 meters). *Subject Headings:* **1. Radiational temperature change 2. Radiation balance. I. New York Univ. College of Engineering. Research Div. II. Contract AF 19(122)-165.**—*Author's abstract.*

6.2–157 551.521.1:621.47

Gardon, Robert, **A segmented-mirror solar furnace for high-intensity thermal radiation studies.** *Review of Scientific Instruments*, 25(5):459–463, May **1954.** 6 figs., 7 refs. **DWB**—A solar furnace is described, in which an array of many small plane mirrors is used to produce radiation of practically uniform intensity (up to about 5.5 cal/cm^2 sec) over an area 5 cm square. This relatively large area of irradiation is required for experiments in which edge effects must be kept to a minimum and could not have been obtained by means of a conventional continuously curved mirror of reasonable focal length and of moderate cost. The performance of the segmented-mirror furnace over a 15 month period is analyzed. *Subject Headings:* **1. Solar furnaces 2. Thermal radiation studies.**—*Author's abstract.*

6.2–158 551.521.1:551.588.2

Kaempfert, Wolfgang (*Trier*), **Die solare Hang-Bestrahlung.** [Solar radiation on a slope.] *Germany. Deutscher Meteorologischer Dienst im Französischen Besatzungsgebiet, Wissenschaftliche Arbeiten*, 1:74–79, **1947.** fig., 7 tables, 16 refs. **DLC**—Formula given and examples worked out for calculation of intensity of solar radiation on a slope. Results useful in agro-meteorology and bioclimatology. *Subject Headings:* **1. Radiation on oriented slopes 2. Radiation intensities 3. Agricultural meteorology.**—*M.R.*

6.2–159 551.521.1:628

†Nebbia, Giorgio (*Bologna Univ., Inst. of Met.*), **Sull'utilizzazione dell'energia solare.** [Utilization of solar energy.] *Geofisica e Meteorologia*, Genoa, 1(6):100–102, Nov./Dec. **1953.** fig., 14 refs. **MH-BH**—A solar distillery is described in detail and illustrated and its efficiency discussed in comparison with similar experimental installations in the U. S. (California and Massachusetts). France, French Morocco, Monaco and Cirenaica. Possibility of using sea water to provide fresh water for domestic purposes is realizable. The distillery was exhibited at the Levante di Bari Exposition on Sept. 5–22, 1953. *Subject Headings:* **1. Solar energy utilization 2. Solar distilleries 3. Italy.**—*M.R.*

6.2–160 551.521.11(436)

*Eder, Hermine, **Örtliche mögliche Sonnenscheindauer in Stunden.** [Local possible hours of sunshine duration.] *Austria. Zentralanstalt für Meteorologie und Geodynamik, Jahrbuch*, **1952,** *New Ser.*, 89:D38, 1953. table. **DWB**—Monthly total possible hours of sunshine for 13 stations in Austria. *Subject Headings:* **1. Possible sunshine duration 2. Austria.**—*M.R.*

6.2–161 551.521.13:523.8

Krook, Max (*Harvard Univ.*), **Interstellar matter and the solar constant.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 143–146. ref.) **DLC**—The author discusses the effect of the sun's passage through clouds of interstellar matter upon variations in the solar constant and the magnitude of these effects. Any obscuring effect by interstellar matter on sunlight reaching the earth can be neglected as the densities

required to make this effect significant would be overshadowed completely by accretion. The accretion problem is analyzed first by considering only the gaseous constituent of the cloud and then the cloud as a system of independent particles. *Subject Headings:* **1. Solar constant 2. Interstellar matter effects.**—*I.L.D.*

6.2–162 551.521.14:551.508.99

Gier, Joseph T.; Dunkle, Robert V. and Bevans, Jerry T. (*Calif. Univ., Berkeley*), **Measurement of absolute spectral reflectivity from 1.0 to 15 microns.** *Optical Society of America, Journal*, 44(7):558–562, July **1954.** 8 figs. **MH-BH**—A device that can be used for the measurement of the absolute spectral reflectivity or reflectance of metals, paints, etc. is described. The unit is used in conjunction with a Perkin-Elmer Model 83 monochromator equipped with an NaCl prism for the wavelength range 1.0 to 15.0 microns. Preliminary results for MgO, polished copper, molybdenum, and electrolytic gold are presented. *Subject Headings:* **1. Spectral reflectivity 2. Albedo 3. Monochromators.**—*Authors' abstract.*

6.2–163 551.521.14:633.51

Hank, Olivér and Vásárhelyi, József, **A talaj színének hatása a gyapot fejlődésére.** [Effect of soil color on the development of cotton.] *Időjárás*, 58(3):137–143, May–June **1954.** 8 figs., 4 tables, 3 refs. **MH-BH**—The preliminary experiment reported in this paper involved treatment of experimental cotton fields with white and black powder. Comparative data on air and soil temperatures and on plant development are presented for the untreated, black and white fields. The white field is found to have yielded the best crop while the black field favored growth of stalk and leaves. *Subject Headings:* **1. Albedo of earth 2. Plant physiology 3. Cotton crop yields.**—*G.T.*

6.2–164 551.521.14:77:535.3

MacAdam, D. L., **Reproduction of colors in outdoor scenes.** *Institute of Radio Engineers, Proceedings*, 42(1):166–174, Jan. **1954.** 21 figs., 15 refs. **DWB**—A great deal of spectrophotometric and colorimetric data (albedo or spectral reflectance curves) on various colors of skin, hair, grass, foliage, sky and earth is presented for use in outdoor color television work. Differences between albedo of men and women, blonds and brunettes, old and young are strikingly shown for various wave lengths from 4000 to 7000Å and compared with that of green leaves. An interesting chart shows relations between leaves, earth, blue or red sky, water, brick and distance objects in daylight (from Hendley and Hecht, 1949). *Subject Headings:* **1. Albedo 2. Spectral reflectance data 3. Color photography.**—*M.R.*

6.2–165 551.521.16(42)

*Blackwell, M. J., **Five years continuous recording of daylight illumination at Kew Observatory.** *Great Britain. Meteorological Research Committee, M.R.P.*, 831, Sept. 3, **1953.** Mimeo. 8 p. 6 figs., 3 tables, 13 refs. **GB-MO**—The paper discusses autographic measurements of illumination on a horizontal surface since 1947, including standardization, sources of error and their correction. Variation is tabulated by 10-day and hourly means. The greatest values (up to 200 klux/hr for 1–2 minutes) are given by clouds near but not obstructing the sun. Diurnal variation is shown for all and for cloudless days. Luminous efficiency (lumens/watt), daylight/radiation intensity, varied from 112 in Dec. to 137 in Sept. (year 128.5), showing a rough linear relation to water vapor content of the atmosphere. *Subject Heading:* **1. Daylight illumination.**—*C.E.P.B.*

6.2–166 551.521.16:551.588.6:551.575

*Harada, Yutaka, **A study of sunlight forests on foggy days.** *Tokyo. Forest Experiment Station, Bulletin*, 64:170–181, Oct. **1953.** 8 figs., 6 tables, 5 refs. In Japanese; English summary p. 180–181. **DWB**—The amount of sunlight received in a forest, compared with that in the open, and the amount in dense fog compared with that on clear days, was observed and the results tabulated, shown graphically, and discussed. The type of tree makes a great difference—ranging from 5.2% in elm (*Ulmus*) forests to 7% in many other species and 38% for ash (*Fraxinus*). Reproduction was inhibited at 5% light intensity but flourishes at 30%. Fog increases the light intensity ratio in forests compared with outside. Results are

given in g cal/cm². *Subject Headings:* **1. Sunlight data 2. Light intensity 3. Fog density 4. Forest influences.**—*M.R.*

6.2–167 551.521.16:551.521.31

Makhotkin, L. G., **O sposobakh vychisleniia rasseiannoĭ osveshchennosti pri iasnom nebe.** [Methods of calculation of scattered illumination for a clear sky.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geofizicheskaia*, No. 5:463–468, **1953.** 2 tables, 19 refs., 3 eqs. **DLC**—Rejecting the formulas given by Prull, Berlage and Exner, the author compares and estimates those given by Kastrov, Gordov and Sobolev. He also shows that the total illumination obtained by the solution of the integral equation, which presents the theory of scattered light, can be transformed into a simple formula applicable to practical purposes. *Subject Headings:* **1. Scattering of light 2. Scattering theory.**—*N.T.Z.*

6.2–168 551.521.3

Almeyda Arroyo, Elias, **La radiación atmosférica.** [Atmospheric radiation.] *Revista Chileña de Historia y Geografía*, Santiago de Chile, No. 106, Jan./Dec. **1945.** 15 p. 28 refs. **DLC**—In this review of progress in radiation research, contributions of German, British and American scientists are discussed. The works considered have been selected from the period 1893–1943. *Subject Heading:* **1. Radiation research.**—*G.T.*

6.2–169 551.521.3:551.521.63

Astoin, Nicole; Johannin-Gilles, Andrée and Vodar, Boris, **Absorption de la vapeur d'eau dans l'ultraviolet extrême.** [Absorption by water vapor in the extreme ultraviolet.] *Académie des Sciences, Paris, Comptes Rendus*, 237(11):558–560, Sept. 14, **1953.** fig., 8 refs. **DWB**—Photometric water vapor absorption measurements were made in the unexplored region 200–500 Å. The absorption curve is characterized by the values $d = (I/l) \log_{10} (I_0/I)$. l—optical path; I_0, I—intensity of incoming and outgoing radiation. The absolute values of the extinction coefficient could not be computed, due to the lack of an absolute manometer. Absorption bands were found around 340 Å suggesting the potential 33,q eV for H_2^+ ions. *Subject Headings:* **1. Absorption by water vapor 2. Ultraviolet spectrum.**—*A.A.*

6.2–170 551.521.3:551.576

Fritz, Sigmund, **Scattering of solar energy by clouds of "large drops."** *Journal of Meteorology*, 11(4):291–300, Aug. **1954.** 6 figs., 4 tables, 20 refs., 23 eqs. **DWB**—Scattering pattern round a large spherical drop (negligible absorption) is divided into photons scattered forward (0–60°) and nearly isotropic scattering in all directions. Pattern is plotted for a single drop and calculated for a cloud of drops as a function of sun's zenith distance Z, cloud thickness h and mean free path of photons L. Albedo is shown to increase markedly with increase of Z, especially with thin clouds. Calculated albedo (fig. 5) is compared with observations by M. Neiburger (airplane, 1949) and others with good results. *Subject Headings:* **1. Scattering of solar radiation 2. Albedo of clouds.**—*C.E.P.B.*

6.2–171 551.521.3:551.311.12

Howell, Wallace E. (*W. E. Howell Associates, Cambridge, Mass.*), **Some measurements of ablation, melting, and solar absorption on a glacier in Peru.** *American Geophysical Union, Transactions*, 34(6):883–888, Dec. **1953.** 6 figs. **MH-BH**—Ablation, melting, and absorption of solar radiation were measured on a glacier of the Nevado de Huagaruancha in the Eastern Cordillera of Peru. From the results it is inferred that (1) evaporation amounts to about five per cent of the melt; (2) the amount of melt is determined largely by the amount of solar radiation absorbed between onset of thaw in the morning and onset of diurnal cloudiness in the afternoon (with average cloudiness, the melt is about one cm daily, rising to 1.5 cm on unusually sunny days); and (3) darkening of the snow increases melt by increasing absorption of radiation and lengthening the period of melting. *Subject Headings:* **1. Glacial ablation 2. Absorption by glaciers 3. Ice melting 4. Peru.**—*Author's abstract.*

6.2–172 551.521.3:551.571

Johannin-Gilles, Andrée, **Absorption de la vapeur d'eau dans l'ultraviolet de Schumann.** [Absorption of water vapor in the Schumann ultraviolet.] *Académie des Sciences, Paris,*

Comptes Rendus, 236(7):676–678, Feb. 16, 1953. 2 figs., refs. **DWB**—Although the Beer-Lambert Law does not hold for absorption of water vapor in the far UV ($\lambda = 1600$–1900 Å), it was possible by means of the data obtained by the author with a special quartz spectrograph at ordinary temperature to establish an approximate relation between optical density (D_1), pressure (P) of the water vapor and length of the chamber. $D = K\ (Pl)^{2/3}$. Data obtained at different pressures and temperatures. An explanation is given in terms of absorption and dissociation. *Subject Headings:* **1. Water vapor absorption spectra 2. Ultraviolet water vapor absorption.**—*M.R.*

6.2–173 551.521.3:551.525

Loewe, F., **Some remarks concerning the seasonal storage of heat in the surface layers of the earth.** *South Africa. Weather Bureau, Notos*, 2(4):270–272, 1953. 13 refs. **DWB**—Discusses a recent paper by SCHUMANN and BURDECKI, published in *Notos*, 2(1/2):4–19, 1953. (*See item* 5.7–10, July 1954, *MAB*.) The authors neglected the angle of elevation of the sun and did not consider the variation of the absorption value with wave length. Furthermore the effect of turbulence in water bodies was not introduced. The results are applicable, however, to snow and ice, or salt lakes with stable stratification. Literature sources for these cases are given. *Subject Headings:* **1. Atmospheric absorption 2. Heat absorption by soil. I. Schumann, T. E. W. II. Burdecki, F.**—*A.A.*

AIR TEMPERATURE

See also: **Temp. averaging** (Makjanic), 6.2–30; **Average temps.** (Richardson), 6.2–32; **Frostfree period** (Smith), 6.2–33; **Drawing of isarithms** (Blumenstock), 6.2–37; **Isotherms** (Canada), 6.2–70; **Mild winter in New England** (Brooks), 6.2–74; **Late spring frosts** (Lawrence), 6.2–75; **Equivalent temps.** (Nagabhushana Rao), 6.2–119; **Humidities and max. and min. temps.** (Tunnell), 6.2–230; **Condensation nuclei** (Schöne), 6.2–245; **Glaze** (Bider), 6.2–249; **Snow temps.** (Bossolasco), 6.2–272; **Microclimatology** (Benedek), 6.2–306.

6.2–174 551.524:581.1

[Akushkina, N. I.; Kravtsova, B. E. and Novoselova, G. A., **Vliianie temperatury na rost i peredvizhenie veshchestv u tomatov.** [The influence of temperature on growth and transfer of substances in tomatoes.] *Akademiia Nauk SSSR, Doklady*, 91(4):969–972, Aug. 1, **1953.** 7 tables, 8 refs. **DLC**—Tomatoes were grown during winter (Dec.–Jan.) under laboratory conditions under temperatures of (1) 23°C–24 hours, (2) 23°C by day and 15°C at night and (3) 23°C by day and 8°C night; the light intensity was 5000 lux. Night temperatures of 15°C increased the growth of lateral shoots but not growth in height, favored the development of the root system and increased the yield by 56%. The 8°C night temperature increased the yield by 45%. The quantity of the fruit was not altered by the lower night temperature. The lower night temperatures favored the growth of organs, the development of which is determined by the movement of fluids from the leaves; it facilitated the breakdown of starch into sugars and thereby promoted the movement of carbohydrates from the leaves. *Subject Headings:* **1. Temperature influences 2. Plant growth 3. Plant chemistry 4. Tomatoes.**—*I.L.D.*

6.2–175 551.524:551.588.1

Rubinshtein, E. S., **O vliianii raspredeleniia okeanov i sushi na zemnom share na temperaturu vozdukha.** [The influence of the global distribution of land and sea on the temperature of the atmosphere.] *Vsesoiuznoe Geograficheskoe Obshchestvo, Leningrad, Izvestiia*, 85(4):373–381, July/Aug. **1953.** 3 figs., 5 tables, map (fold.) **DLC**—Analyzing mean latitudinal air temperature data and maps of air temperature isanomals is one of the best methods for studying land-sea interaction, a problem basic to the theory of climate. In connection with the accumulation of meteorological data many works have appeared in various countries aimed at making isanomaly charts more precise. Author reviews and summarizes work done in this field recently (since 1918) and compares the results of his and L. S. KANIUKAVA's calculations of mean temperature of latitude belts and isanomaly charts with values obtained by MEINARDUS in 1925. *Subject Headings:* **1. Ocean-atmosphere interaction 2. Air temperatures.**—*A.M.P.*

6.2–176 551.524:612.014.43

Topitz, Alois, **Bemerkung zur Winterarbeit im Freien.** [Remark on winter work in the open.] *Wetter und Leben*, 6(1/2):25–26, March **1954. DWB** –Winter work in the open is hazardous at temperatures above 0°C when wet-cold weather prevails and clothing and shoes become wet. High wind velocities and continuous exposure to one particular wind direction are injurious to health. Rest periods in warm rooms are recommended during winter work. *Subject Headings:* **1. Temperature effects 2. Winter working conditions 3. Medical meteorology.**—*I.L.D.*

6.2–177 551.524:536.48

Vajda, John and Hart, Donald P., **A low temperature bath for constant temperature studies.** *Review of Scientific Instruments*, 24(5):354–355, May **1953.** 2 figs. **DWB**—Describes the construction and operation of a low temperature bath which the authors used for low temperature impact testing. Its simplicity, economical operation and close temperature control make it applicable to other uses in the field of low temperature studies. *Subject Heading:* **1. Low temperature research.**—*Authors' abstract.*

6.2–178 551.524.36(54)

Ganesan, V., **Post monsoon heat waves at Karachi.** *India. Meteorological Dept., Scientific Notes*, 9(107):68–71, **1946.** fig., 4 tables. **DWB**—Abnormally high temperatures prevail over Karachi for a few days in some Octobers. These spells of hot weather are associated with a storm or depression over the Central Arabian Sea or a trough of low pressure over the north Deccan. Such occasions are characterized by a solid easterly to northeasterly current over the belt of the country from Assam to Sind. This current apparently acquires additional heat during its passage through Rajputana, and also prevents or delays the onset of sea breeze at Karachi, resulting in a heat wave over Karachi. The typical heat wave of October 1941 is discussed in detail. *Subject Headings:* **1. Heat waves 2. Karachi, India.**—*Author's abstract.*

6.2–179 551.524.36(44) · 551.577.38(44)

Gouache, R., **L'été sec et chaud de 1952 á Ganges (Hérault).** [Dry and hot summer of 1952 at Ganges, France.] *La Météorologie*, 4th Ser., No. 28:172–174, Oct./Dec. **1952.** French, English and Spanish summaries p. 172. **DWB**—In a region which is noted for hot summers, (S. of France), the months of June–Aug. 1952 were exceptional for extreme maximum temperature (38°C or 100°F), number of days over 30°C (35 without a break and 54 with 2 exceptions) and for lack of rain and number of sunny days. The condition centered at Ganges, Nîmes and vicinity. *Subject Headings:* **1. Drought, France (1952) 2. Hot summers 3. Ganges, France.**—*M.R.*

6.2–180 551.524.36

Guthrie, A. B., Jr., **How to live at 58 below.** *New York Times Magazine*, Section 6, p. 18, Jan. 31, **1954.** illus. **DWB**—A humorous and slightly exaggerated account of how the "natives" live when it is 46°F below zero in Great Falls, Mont. (or 58°F below as it has been at other places). The marked variations from place to place (due to topography) and in short periods of time (due to chinooks which are frequent) are emphasized. The "natives" like this climate, which is sunny and invigorating, although unpredictable. Such cold winters are however, unusual. *Subject Headings:* **1. Cold winters 2. Extreme temperatures 3. Great Falls, Montana.**—*M.R.*

6.2–181 551.524.36:632:634.8

Jancke, O., **Wärmemessungen im Weinberg während der Hitzewelle im Juni–Juli des Jahres 1952 unter besonderer Berücksichtigung ihrer Wirkung auf den Sauerwurmbefall.** [Warmth measurements in a vineyard during the heat wave in June–July 1952 with special reference to its effect on the incidence of sour-worm.] *Angewandte Meteorologie*, 2(1):19–23, Feb. **1954.** 5 figs., 3 tables, 4 refs. **MH-BH, DWB**—On July 2–4, 1952, at Neustadt, temperature among the vines exceeded 40°C. The heat and dryness killed most of the worms before egglaying. Temperature among the leaves was mostly lower than in the shadow of

rows; the highest temperatures were near the soil. In narrow rows temperature was about 2°C lower than in broad rows. *Subject Headings:* **1. Hot summers 2. Viticulture.**—*C.E.P.B.*

6.2–182 551.524.36(494)

*Schüepp, M., **Die Häufigkeitsverteilung der Zürcher Temperatur-Tagesmittel im Zeitraum 1901–1940.** [Frequency distribution of the daily mean temperature at Zurich, 1901–1940.] *Switzerland. Meteorologische Zentralanstalt, Annalen,* v. 89, 1952. 3 p. appended to: *Anhang* No. 7. table (fold.), 6 refs. **DWB**—Detailed contingency table for 5-day periods in each month for each whole degree centigrade from −18°C to +26°C. Method of preparation explained. *Subject Headings:* **1. Temperature frequency distribution data 2. Zurich, Switzerland.**—*M.R.*

6.2–183 551.524.37:551.311.181(261.3)

Palosuo, Erkki, **A treatise on severe ice conditions in the central Baltic.** *Fennia,* Helsinki, 77(1):1–130, **1953.** 46 figs., charts, bibliog. p. 127–130. **DWB**—As a result of a synthesis involving a large amount of material from ice reconnaissance flights, lighthouse reports and ships' logs, the evolution of ice cover over the central Baltic during the winter of 1942 is described in detail. The winter of 1942 is also compared with the severe ice winters of 1940 and 1947 (for these winters, however, much less data are available) and an attempt is made to define the normal stages of ice cover conditions in the central Baltic during severe ice winters (Jurva's graphical method). The study includes repeated reference to the general atmospheric circulation and pressure development. A scatter diagram showing the relation between maximum extent of ice cover in the Baltic and average temperature of corresponding winter months in Stockholm (1756–1950) is featured on p. 29. Another graph (p. 32) represents meteorological factors (temperature, solar radiation and wind) at Stockholm and the area of ice cover over the Baltic throughout the winter 1942. *Subject Headings:* **1. Sea ice 2. Severe winters 3. Baltic Sea 4. Stockholm, Sweden.**—*G.T.*

SOIL TEMPERATURE

See also: **Seasonal storage of heat** (Loewe), 6.2–173; **Heat balance measurement** (Lange), 6.2–318.

6.2–184 551.525.4

Whiten, A. J., **Some notes on soil temperatures.** *Weather,* 9(8):256, Aug. **1954.** table. **DWB**—Notes on observations in heavy clay in S. London. Figures are quoted for ¼, ½, 1, 2, 4, 8 in., 1, 2 and 4 ft. In summer the effect of strong insolation can be traced to a depth of 1 ft. *Subject Headings:* **1. Soil temperatures 2. London, England.**—*C.E.P.B.*

6.2–185 551.525.5(439.1)

*Batta, Erzsébet, **Adatok hazánk talajfagy viszonyaihoz.** [Data on soil freezing conditions in Hungary.] *Időjárás,* 58(2):81–90, March/April **1954.** 2 figs., table, 16 refs. Russian and German summaries p. 81. **MH-BH**—A table of monthly mean, maximum and minimum number of days with freezing soil temperature at various depths in Budapest is presented for the period 1911/12–1952/53. Graphs showing frost penetration during the severe winters 1928/29 and 1939/40 at six stations in Hungary are drawn (the frost criterion applied is zero temperature rather than actual freezing of the soil). Frost conditions in Hungary are discussed on the basis of these data. Attention is called to the fact that the occurrence of freezing temperature is strongly dependent on local factors and therefore is microclimatological in character. *Subject Headings:* **1. Soil freezing data 2. Hungary.**—*G.T.*

6.2–186 551.525.5:69

Helgerson, Richard W., **Arctic's frozen earth menace.** *Science Digest,* Chicago, 32(5):13–17, Nov. **1952.** **DWB**—Areal distribution of permafrost, its physical properties and its effects, especially on construction engineering are discussed. The article includes a description of the mechanism of pingos (frost blisters) and of their eruption. *Subject Headings:* **1. Permafrost 2. Building construction.**—*G.T.*

6.2–187 551.525.5(477)

Lukoshin, A. G., **Mnogoletniaia merzlota v doline reki Ufy.** [Perennially frozen ground in the valley of the Ufa River.] *Priroda*, 41(1):115, Jan. **1952.** fig. **DLC**—On the steep south bank of the Ufa River (South Ural) frozen ground was observed during the summer. *Subject Headings:* **1. Frozen soil 2. Permafrost 3. Ufa River Valley 4. U.S.S.R.**—*A.A.*

WATER TEMPERATURE

6.2–188 551.526.8:631.67:633.18

Yoshida, Y. (*Kyushyu Agric. Experim. Station*), **Studies on the effects of temperature of irrigating water upon the growth and yields of rice plant.** *Journal of Agricultural Meteorology*, Tokyo, 6(3/4):160–164, Aug. **1951.** 4 figs., 5 tables, 6 refs. In Japanese; English summary p. 164. **DWB**—Frequently in Japan the growth of rice plants is vigorous at first, but visibly declines before the harvest (fall). This phenomenon is called "AKI-OCHI" by the farmers, which literally means "fall in fall," i.e., "growth and yields decline in fall." The present report is the result of one of the programs to study and prevent the occurrence of the phenomenon. The rice plants were grown in 4 plots; plot A: the irrigating water is kept warm only during the night; plot B; kept cold only during the night; plot C: kept cold throughout the whole day; and plot D: in the natural state. Measuring of the crop after harvest revealed the following facts: plot C is the worst; B and D better, A the best. *Subject Headings:* **1. Rice yield 2. Water temperatures 3. Plant growth 4. Irrigation.**—*Author's abstract.*

6.2–189 551.526.8

Verber, James L.; Bryson, R. A. and Suomi, V. E. (*Wisc. Univ.*), **Short time variation of temperature in Lake Mendota, Wisconsin.** *Ohio Journal of Science*, Columbus, 53(2):72–76, March **1953.** 6 figs., 2 refs. **DLC**—As a result of extensive water temperature surveys made in Lake Mendota on 4 days in Aug. 1949, short-time temperature variations are identified and coordinated with wind activity. It is found that the changes in water temperature "can best be accounted for by wind-driven currents within the lake." *Subject Headings:* **1. Lake temperatures 2. Wind driven currents 3. Lake Mendota, Wisc.**—*G.T.*

PRESSURE AND WIND

PRESSURE

See also: **Gradient wind variables** (Di Benedetto), 6.2–110; **Weather and circulation** (Winston), 6.2–266.

6.2–190 551.54:612.27

Mitchell, Claude (*Supt. of Schools, West Newton, Pa.*), **Weather as a factor in behavior problems.** *Journal of Human Ecology*, Crystal Lake, Illinois, 2(10), **1953.** 4 p. **DWB**—A general statement of the problem of behavior of animals and man as affected by changes in weather, followed by results of a study of absences and deportment cases for several weeks in relation to changes in barometer. It was found that such cases occurred twice as often during periods of changing barometer (units not stated) than during periods of stable barometer, but that absences were most frequent on Friday—the day before the week-end holiday. *Subject Headings:* **1. Atmospheric pressure effects 2. Human behavior.**—*M.R.*

6.2–191 551.54:535.32:546.212

Satô, Mizuho, **The effect of pressure on refractive index of water at freezing point.** *Japan Academy, Tokyo, Proceedings*, 26(7):36–37, July **1950.** refs., eqs. In English. **DWB**—The formula $\frac{n^2-1}{n^2+2}=c\rho$ (where c is a constant), developed by LORENTZ-LORENZ for expressing the relation between refractive index (n) and density (ρ) is applied to water at the freezing point under a pressure of 0~484 atmosphere using the isothermal compressibility index 46.2×10^{-6} cm²/kg given by P. W. BRIDGMAN, and $n=1.334$ for the D line of sodium. Account is then taken of the transformation pressure of 3280 atmosphere between water and ice as

found by K. HONDA and the change of n due to this pressure ($\delta n = 0.0558$) is added to n whereby the refractive index 1.3898 is obtained which is close to the value 1.3893 found by L. ZEHNDER. *Subject Headings:* **1. Refractive index 2. Pressure effects 3. Freezing point of water.**—*G.T.*

6.2–192 551.541

*Flauraud, E. A.; Mears, A. H.; Crowley, F. A., Jr. and Crary, A. P., **Investigation of microbarometric oscillations in eastern Massachusetts.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 27, May **1954.** 62 p. 5 tables, 35 figs. (some fold.), bibliog. p. 61–62. **DLC**—The instruments used in a study of microbarometric oscillations of from 5- to 100-min periods and from 0.05- to 1-mb double amplitudes are described. A method of obtaining an index of microbarometric activity is presented and the results of a year-long twelve-hourly index determination are described. The relative frequency of occurrence and average amplitude of waves of different periods are shown; a "relative total amplitude" concept is also utilized. A description is given of methods for cross-correlating microbarograms from different stations of the nonlinear arrays used for the determination of the pressure wave velocities. These velocities were found to be very much the same as those of the 200-mb level winds; the agreement with winds at this level was much greater than with agreements at any of five lower altitude pressure levels investigated. Large amplitude long period pressure waves were found to be most prevalent during intervals of increasing wind speed at or above the 500-mb level. No correlation between waves of particular periods and wind speed or wind shear was discovered for any of the six pressure levels investigated. It was found, on the evidence of this investigation, that without additional data no differentiation could be made between internal waves and cellular waves. Some mention is made of the comparison of microbarograms with marigrams, seismograms, and records of hurricane positions. *Subject Headings:* **1. Microbarometric oscillations 2. Microbarographs 3. Eastern Massachusetts.** —*Authors' abstract.*

6.2–193 551.543.5

Williams, D. T. (*U. S. W. B., Kansas City, Mo.*), **A theory of pressure distribution for certain density models.** Kansas City, Mo., U. S. Weather Bureau, Dec. 31, **1953.** 33 p. figs., eqs. **DWB**—Pressure distributions resulting from models with constant density increments and perpendicular planar boundaries are investigated quantitatively in a hydrostatic pressure distribution; a three-boundary model results in a pressure jump; and a four-boundary model results in a pressure nose. Equations are derived that determine the three-boundary model from the pressure jump trace. Other models and other pressure change processes are discussed qualitatively. *Subject Headings:* **1. Pressure distribution 2. Pressure jump 3. Laboratory models.**—*Author's abstract.*

6.2–194 551.543:551.553:532.59

Pothecary, I. J. W., **Short-period variations in surface pressure and wind.** *Royal Meteorological Society, Quarterly Journal*, 80(345):395–401, July **1954.** 5 figs., table, ref., 2 eqs. **DWB**—On July 5, 1952, a cold front lay south of England with a strong inversion. The cold air (due to thunderstorms) blocked the easterly flow and set up an oscillation at the discontinuity, moving N.E. at 13 m/s, period about 15 min, wave length 13 km, depth 200 m. The disturbance is analyzed as a discontinuity between two superimposed incompressible streams. *Subject Headings:* **1. Pressure variations 2. Wind variations.**—*C.E.P.B.*

6.2–195 551.543

Szász, Gábor, **A légnyomás nyugtalansága Debrecenben.** [Pressure oscillations in Debrecen.] *Időjárás*, 58(2):103–111, March/April **1954.** 5 figs., 4 tables, 6 refs. Russian and German summaries p. 103. **MH-BH**—The annual course of pressure microvariations at Debrecen is investigated from 20 years of pressure records. Pressure oscillations are expressed by daily sums of differences between consecutive measurements which are added up without regard to sign. Pressure oscillations are found to follow an annual course roughly corresponding to the course of the daily pressure range. Within short periods, however, the two curves may show opposite tendencies as the oscillations during anticyclonic situations are less marked. *Subject Headings:* **1. Pressure microvariations 2. Debrecen, Hungary.**—*Trans. of author's abstract.*

6.2–196 551.543.1

Siebert, Manfred, **Zur Theorie der thermischen Erregung gezeitenartiger Schwingungen der Erdatmosphäre.** [On the theory of the thermal regulation of the tidal oscillations of the earth's atmosphere.] *Naturwissenschaften*, 41(19):446, Oct. **1954.** 5 refs. **DWB**—The semidiurnal pressure wave is attributed to the radiation component of the temperature variation in the upper atmosphere, with only a 3–6-fold increase by resonance (compared with the 100-fold increase required by the surface temperature theory). *Subject Heading:* **1. Diurnal pressure variations.**—*C.E.P.B.*

6.2–197 551.543.2:517.512.2

*Wahl, Eberhard, **Untersuchungen über den jährlichen Luftdruckgang.** [Investigations on annual air pressure variations.] *Berlin, Universität. Meteorologisches Institut, Veröffentlichungen*, 4(4), **1942.** 71 p. 15 figs., table, 13 refs. **DLC**—Monthly pressures at 385 places all over the world are analyzed for first 3 harmonics; results tabulated in Appendix. Accuracy calculated as 1 mm (equator) to 3 mm (poleward). Effect of height and reduction to sea level (illustrated by N. America) are considered. Results are shown as world charts (Mercator and N. polar projections) of amplitude and phase of annual wave and Mercator charts of amplitude of 6- and 4-month waves. Reconstruction of monthly values from these 3 waves is good. The annual wave agrees with expectations from thermal effect of land and sea. Half-year wave is shown as result of opposition between two waves in sub-tropics and Arctic. *Subject Headings:* **1. Annual pressure variations 2. Harmonic analysis.**—*C.E.P.B.*

6.2–198 551.543.7(52)

*Okazaki, Atuyosi and Tubota, Hirosi, **The monthly normal isobars at 1000 and 2000 metre levels over Japan and neighbouring districts.** *Tokyo. Univ. Faculty of Science, Journal, Section* 1, 1(10):371-380, Dec. **1927.** figs., tables. **DWB**—One of the early attempts at drawing carefully prepared upper level mean pressure charts. Separate charts are presented for each month and for each level (1000 m, 2000 m and sea level) over the East Asia-Japan area, to show the features of summer and winter at "high" levels as compared to the surface of the earth. Data for each of 100 stations for each month at 1000 m and 2000 m and table for calculating 1000 m pressure from sea level pressure for various mean temperatures and constant lapse rate of 0.5°C/100 m are presented. The monsoonal effects and the effect of the island of Honshu in distorting the isobars is shown on these charts. *Subject Headings:* **1. Upper air pressure charts 2. Upper air pressure 3. Upper level isobars 4. Japan.**—*M.R.*

TURBULENCE

See also: **On diffusion . . .** (Davies), 6.2–101; **Horizontal divergence equation** (Hess, Sherman), 6.2–111; **Taylor's "ink walls"** (Long), 6.2–114; **Turbulent convection** (Malkus), 6.2–117; **Constant level balloons** (Moore, others), 6.2–118.

6.2–199 551.551:551.557:629.13

Hislop, G. S. and Davies, D. M., **An investigation of high-altitude clear-air turbulence over Europe using Mosquito aircraft.** *Great Britain. Aeronautical Research Council, Reports and Memoranda*, No. 2737. June **1950.** 39 p. 18 figs., 3 tables, 18 refs., 6 eqs. **GB-MO**—Flights with accelerometer were made in area 1000 mi round Cranfield between 15,000 and 37,000 ft. Twenty areas with vertical acceleration exceeding ±0.2 g were found in isolated patches of different diameter and thickness; a typical patch was 50–100 miles long and 3000 ft thick. Greatest gust +26 ft/sec; a gust of 36 ft/sec could be expected once in 10^6 miles. Marked vertical wind gradient is the most probable cause. The worst turbulence is associated with jet streams; turbulence is also often found near the tropopause. Several examples of upper air topography (jet stream, etc.) are shown. *Subject Headings:* **1. High level turbulence 2. Jet stream.**—*C.E.P.B.*

6.2–200 551.551:551.557:565.7

[Hyde, Eric A.], **Air turbulence at high altitudes. A report by Short Bros. and Harland test pilots.** London, Sidney-Barton, Ltd., 1954. 5 p. Mimeo. **GB-MO**—Summary of a report by Eric A. Hyde on turbulence above 18,000 ft on 300 flights above Britain. Estimates are on a scale of 1 Mild to 5 Violent (approximating to high speed flight in very tur-

bulent air at low levels; only 4 cases were reported). Severe turbulence is most frequent at 25–29,000 ft. Moderate turbulence is frequent at 38–43,000 ft, especially in summer. At 40–46,000 ft only rare light turbulence is met. The thickness of the turbulent layer averages 1500 ft. Turbulence is rare and moderate above the tropopause and shows little association with cloud type, frontal systems or jet stream. *Subject Headings:* **1. High level turbulence. I. Short Bros. and Harland, Ltd.**—*C.E.P.B.*

6.2–201 551.551

Konstantinov, A. R., **Issledovanie turbulentnoĭ struktury vetra v prizemnom sloe atmosfery.** [Investigation of the turbulent wind structure in the atmospheric layer near the ground.] *Leningrad. Glavnaia Geofizicheskaia Observatoriia, Trudy*, 16(78):10–24, **1949.** 22 figs., 20 refs., 11 eqs. **DLC**—Measurements of horizontal and vertical wind fluctuations were made by means of a thermoanemograph with photographic registration and also with a mechanical anemograph. The structure of wind fluctuations, dependent on stratification, is studied, and the coefficients of exchange are computed directly, which agree with BUDYKO's scheme. Observational evidence shows that the friction velocity does not change with height. VON KÁRMÁN's constant depends largely on RICHARDSON's number. *Subject Headings:* **1. Wind fluctuations 2. Exchange coefficient.**—*A.A.*

6.2–202 551.551:551.596.1

Krasil'nikov, V. A. **O fiiuktuatsiiakh fazy ul'trazvukovykh voln pri ikh rasprostranenii v prizemnom sloe vozdukha.** [Fluctuation phases of ultrasonic waves by dispersion in the air layer near the ground.] *Akademiia Nauk SSSR, Doklady*, 88(4):657–660, Feb. 1, **1953.** 2 figs., 4 tables, 5 refs. **DLC**—Experimental investigations were carried out during summer and autumn of 1951 at KHlebnikovo near Moscow. Transmitters and receivers of special construction were placed at heights of 2.2 m above soil surface covered with low grass. Measurements of phases with accuracy of 2° to 3° were made for frequency range of 1–60 khz. It was found that the values of phase fluctuation depends on the time interval, frequency, wavelength and wind velocity. These interrelations are in a good agreement with theoretical considerations published by the author in *Akademii Nauk SSSR, Doklady*, 47(7), **1945** (*see* 4B–133, Feb. 1953, *MAB.*) *Subject Headings:* **1. Ultrasonic waves 2. Turbulence effects.** —*N.T.Z.*

6.2–203 551.551

Krzywoblocki, M. Z. (*Univ. of Illinois*), **On the fundamentals of locally isotropic turbulence in magneto-hydrodynamics of a compressible medium.** *Acta Physica Austriaca*, Vienna, 6(4):250–256, Jan. **1953.** 8 refs., eqs. **DLC**—Study based on the author's fundamental equations for the propagation of correlation functions for velocity, density, etc. extending the hypothesis of locally isotropic turbulence and assuming that the transfer of energy from big eddies to small eddies takes place in four forms of energy: kinetic energy, energy due to change in volume, heat and magnetic energy. Since the equations contain highly complicated composite random variables and correlation functions, high speed computing devices are necessary in order to get even an approximate solution. *Subject Headings:* **1. Statistical theory of turbulence 2. Isotropic turbulence.**—*A.A.*

6.2–204 551.551:551.557:797.55

§Kuettner, Joachim, **Note on high level turbulence encountered by a glider.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 29, Dec. **1952.** 3 p. ref., eqs. **MH-BH**—A brief technical note reporting conditions attending an observation of severe turbulence in clear air (at 40,000 ft) near the tropopause. The author was flying a Pratt-Reed research glider of the Sierra Wave Project on Dec. 18, 1951 when he encountered accelerations of $>+3$ g and -2.5 g at 1600 P.S.T. after a smooth steady flight in the stationary lee wave of the Sierras about 50 mi S of Bishop, Calif. A 300 mb chart for 1900 P.S.T. shows proximity to jet stream. The gust values were obtained with an accelerometer, so are not too precise, but "sharp edge" or effective gust velocities of 37 ft/sec and true gust velocities of >70 ft/sec are indicated. Similar effective gust velocities have been encountered between 32–40,000 ft on previous occasions. *Subject Headings:* **1. High level turbulence 2. Gust velocities 3. Gliding flights 4. Bishop, Calif.**—*M.R.*

6.2–205 551.551

Shiotani, Masao (*Railway Tech. Research Inst., Tokyo*), **Some notes on the structure of wind in the lowest layer of the atmosphere.** *Meteorological Society of Japan, Journal*, 31(10): 327–335, Oct. **1953.** 6 figs., 4 tables, 5 refs. **MH-BH**—On the basis of KOLOMOGOROV's similarity hypothesis of local isotropic turbulence, the correlation coefficient R_t of the velocity fluctuations at time points t_o and $t+t_o$ is written as follows: $R_t = 1-(t/T_o)^{2/3}$; (1), where T_o denotes the duration of the passage of the largest turbulent element through the measuring point. Assuming that the correlation coefficient $(R_t)_w$ (which is calculated from the vertical velocity fluctuations w' measured in the atmospheric layer near the ground) is expressed by the formula (1), the dependence of T_o on the height of observation z and on the mean velocity $\bar{u}$ is obtained experimentally. From photographic records of vertical velocity fluctuations w' measured in the adiabatic atmosphere over level snow surfaces, R_t is calculated and is found to be well expressed by (1) in the range of small t-s. It is concluded from the experimental data that T_o is proportional to z. Consequently the spectrum of turbulent energy in the wave-frequency range k is expressed by $(k/k_o)^{-5/3}$, where k_o is inversely proportional to z. *Subject Heading:* **1. Turbulence spectrum.**—*Author's abstract.*

6.2–206 551.551:533.15

Townsend, A. A., **The diffusion behind a line source in homogeneous turbulence.** *Royal Society of London, Proceedings*, Ser. A, 224(1159):487–512, July 22, **1954.** 16 figs., 3 tables, 11 refs., eqs. **DWB**—The theory of turbulent diffusion by continuous movements and independently by molecular diffusion is discussed. Mean temperatures and temperature fluctuations were measured downstream from two hot wires in a wind tunnel, and accelerated diffusion of heat caused by intensification of temperature gradients by turbulent motion was computed from lateral temperature correlations in the flow, and found to be comparable with total diffusion. Both the total diffusion process and the process of accelerated molecular diffusion are very nearly self-preserving during decay in the initial period. . . . The rate of spread of the heat wake is simply related to the particle diffusion only for short diffusion times at ordinary Reynolds numbers, and the mean-square particle acceleration can be computed. The results are significantly larger than those found by other workers who have neglected the additional spread of the wake by accelerated molecular diffusion. *Subject Heading:* **1. Turbulent diffusion.**—*From author's abstract.*

6.2–207 551.551:551.557:656.7

Ulrich, K. O., **Böen in der höheren Atmosphärebilden. Gefahrenzonen für den Luftverkehr.** [High level turbulence. Danger zones for air traffic.] *Umschau*, 54(19):577–580, Oct. 1, **1954.** 8 figs. **DWB**—The jet stream is explained by polar and tropical air streams flowing side by side. The density difference causes a vertical increase of velocity up to over 100 km/hr per km, with great turbulence in the narrow frontal zone below. Sinuosities due to upper troughs may cause two tropopauses with great turbulence between them. These upper zones of strong vertical gusts are dangerous because not marked by clouds. They may have caused the loss of Comet aircraft over the Mediterranean on Jan. 10 and April 8, 1954; 225 mb charts for these days show marked polar troughs with labile cold fronts. *Subject Headings:* **1. High level turbulence 2. Jet stream 3. Upper level troughs 4. Aircraft accidents.**—*C.E.P.B.*

WIND

See also: **Structure of non-linear scale** (Eickerman), 6.2–27; **Mean winds** (Karshoveı), 6.2–41; **Flow of viscous fluid on a rotating sphere** (Rogers), 6.2–121; **Upper cold lows** (John), 6.2–143; **Pressure and wind variations** (Pothecary), 6.2–194; **Surface winds** (Ives, others), 6.2–209; **Condensation nuclei** (Schöne), 6.2–245; **Drought and dust . . .** (Warn), 6.2–264; **Radiosonde ascents** (Krishna Rao), 6.2–320; **Atmospheric turbulence** (Keller), 6.2–325.

6.2–208 551.553

Lamb, H. H., **Unusual behaviour of the wind at Luqa Airport, Malta.** *Meteorological Magazine*, London, 83(987):264–268, Sept. **1954.** fig., 4 photos, 3 tables, 4 refs. **DWB**—

On Oct. 16, 1953, southerly wind was interrupted 6 times by swings to W or WNW at regular 15 min intervals, with barometer oscillations of about 1 mb. The oscillations are attributed to waves of length 3–4 mi on a degenerate front at an inversion. Upper air data are given. Similar waves in Britain are compared. *Subject Headings:* **1. Wind variations 2. Malta.**—*C.E.P.B.*

6.2–209 551.553.6 551.552(792)

Ives, Ronald L.; Wilkinson, Rita K. and Kroona, Evelyn L. (*Dugway Proving Ground, Roole, Utah*), **Surface winds in the Salt Lake Desert. I. The Beulah Station record.** *American Meteorological Society, Bulletin*, 34(7):304–310, Sept. **1953.** 6 figs. **MH-BH**—Observational and derived wind data at the 2 m level for the calendar year 1944 for Beulah Station (central Tovele County, Utah) are presented graphically and are analyzed. The diurnal wind direction regime is divided into three daily phases of considerable directional consistency but of variable duration. These data present "a typical Basin-and-Range province wind behavior pattern" that consists of a regional wind trend upon which is superimposed a local topographically determined within-valley air circulation. *Subject Headings:* **1. Surface winds 2. Salt Lake Desert, Utah.**—*I.L.D.*

6.2–210 551.553.8:551.515.3

§Makhover, Z. M., **Smerch nad Voronezhem.** [Windspout over Voronezh.] *Priroda*, Moscow, 43(5):113–114, May **1954.** fig. **DLC**—The windspout which appeared over Voronezh on June 15, 1953 is described and a schematic synoptic chart at the time of its appearance is given. *Subject Headings:* **1. Windspouts 2. Voronezh, U.S.S.R.**—*I.L.D.*

6.2–211 551.553.8:551.556:699.83

Man-made hurricane tests windows. *Engineering News-Record*, p. 49–50, June **1952. DWB**—Tests of window resistance to hurricane and torrential rain, conducted by H. Horton Sheldon, Univ. of Miami, are described. A blower producing air speeds up to 140 mph and propelling water at the rate of 20 gpm, operates at 20 ft from test windows. Air and water infiltration is measured behind the windows. A standard test lasts 12 min, 10 at slightly above 100 mph steady and 2 at 80–120 mph gusty air flow. Permissible infiltration is 75 cfm air and 0.20 gpm water. *Subject Headings:* **1. Hurricane-force winds 2. Building resistance 3. Wind tunnel experiments 4. Rain intensities 5. Stormproofing buildings. I. Sheldon, H. Horton.**—*G.T.*

6.2–212 551.553.8(471.1)

Rodewald, M., **Sommersturm in Kemi (Nordbotten).** [Summer storm at Kemi (North Bothnia).] *Wetterlotse*, No. 77:213–214, Oct. **1954. DLC**—Brief account of a 15-min. squall (Beaufort 11–12) on July 14, 1954, apparently a heat thunderstorm. *Subject Headings:* **1. Squalls 2. Finland.**—*C.E.P.B.*

6.2–213 551.554:551.588.6

Ishikawa, Masayuki, **Wind movements in forest areas.** *Tokyo. Forest Experiment Station, Bulletin*, No. 64:166–169, Oct. **1953.** 5 figs., 2 tables, 5 refs. In Japanese; English summary p. 169. **DWB**—A study of vertical wind velocity distributions was conducted in broad-leaf forest areas to observe wind movements. Measurements were made by using seven small 3-cup anemometers. The wind velocity at a given height u gradually decreased from the fringe of the forest inwards which can be expressed in a simple exponential function of the distance x from the fringe; $u = u_0 e^{-ax}$. The drag coefficient a as calculated, is at 0.029 in the canopy while it is at 0.009 under the canopy. *Subject Headings:* **1. Vertical wind velocity distribution 2. Forest influences.**—*Author's abstract.*

6.2–214 551.555.4

Grober, K. W., **Bemerkungen zu dem Aufsatz von H. Garisch: "Zur vertikalen Windgeschwindigkeit bei Bora."** [Remarks on the article by H. Garisch: "Vertical wind velocity during bora."] *Zeitschrift für Meteorologie*, 8(2/3):76, Feb./March **1954. DWB**—Corrects fantastic assumptions about the "vertical" wind speed during a bora on the Dalmatian coast,

made by GARISCH (*see item* 5H–91, Aug. 1954, *MAB*) and communicates some mean and extreme values from the author's own observations. *Subject Headings:* **1. Bora 2. Local winds 3. Vertical wind velocity 4. Dalmatian Coast, Yugoslavia. I. Garisch, H.**—*A.A.*

6.2–215 551.555.9

Schamp, Heinz, **Die Etesien, ein Luftkörper?** [The etesian—an air mass?] *Meteorologische Rundschau*, 7(9/10):174–177, Sept./Oct. **1954.** 16 refs. **DWB**—Recent, mainly aerological, studies have shown that the "Etesian s.s." of SCHNEIDER-CARIUS and the "classical Etesian" of KARAPIPERIS can be defined as a summer air mass crossing the Aegean. Its thermal and humidity structure characterize it as a type of trade inversion resulting from subsidence in an anticyclone. The classification of L. N. KARAPIPERIS (*Meteorologische Rundschau*, 7(1/2)1954; *see item* 5.8–171, Aug. 1954, *MAB*) is discussed in detail. *Subject Headings:* **1. Etesian winds. I. Karapiperis, L. N.**—*C.E.P.B.*

WIND EFFECTS

See also: **Wind effects on shallow water** (Kivisild), 6.2–9; **Effect of winds on length of day** (Mintz, Munk), 6.2–168; **Hurricane test windows, 6.2–211.**

6.2–216 551.556:532.593:551.465 550.342

Bernard, Pierre, **Origine des microséismes et de la houle.** [Origin of microseisms and of swell.] *France. Comité Central d'Oceanographie et d'Étude des Côtes, Bulletin d'Information*, 4(4):137–141, April **1952.** 7 figs., 16 refs. Abstracted from reprint. **DWB**—The correlation between microseisms, swell and depression centers is discussed with particular attention to the Doppler effect observed in the period of microseisms and swell when the depression approaches the point of observation or moves away from it. The study is a synthesis of observations reported by various authors from different geographic locations. Examples are given in the form of seismograms, comparative curves and a map showing correlation between swell and storm track. Photographs of pyramid-shaped waves in the eye of a storm are presented. *Subject Headings:* **1. Microseisms and swell 2. Wind waves.**—*G.T.*

6.2–217 551.556:551.465

Montgomery, R. B. (*Woods Hole, Mass.*), **The present position of the study of exchange across the ocean-atmosphere interface.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:131–140, Dec. **1952.** tables, refs. **DWB**—Summarizing recent papers on the interfacial atmosphere-ocean stress in relation to wind speed, contradictory results were found, the most striking being between NEUMANN's approach (resistance coefficient γ^2, inversely proportional to wind speed) and DURST's and FRANCIS's suggestion (γ^2 proportional to wind speed). No agreement exists also about the mechanical power transmission across the interface (generation of waves). VON KÁRMÁN's constant is maintained by at least 12%. *Subject Headings:* **1. Ocean-atmosphere interaction 2. Shear stress 3. Von Kármán's constant.**—*A.A.*

6.2–218 551.556:532.59

Mortimer, C. H. (*Freshwater Biological Assoc.*), **A model lake to illustrate water movements produced by wind.** *Irrigation and Power*, Delhi, 10(2/3):147, April/July **1953. DWB**—Tank experiment, described by author, consists of a long glass tank filled with water and arranged so wind could blow over the surface of the water and so solar heating could be simulated by hot wires in the surface layer (producing density stratification). Drag of surface waters, upwelling and internal waves can be observed by colored dyes as tracers. *Subject Headings:* **1. Lake models 2. Laboratory models 3. Wind stress on water 4. Wave mechanics.**—*M.R.*

6.2–219 551.556:551.465

Munk, W. H. (*Scripps Inst. of Ocean., Univ. of Calif., La Jolla*), **The roughness of the air-sea boundary.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:141–144, Dec. **1952.** ref. **DWB**—Theoretical considerations suggest that the stress of the wind on the water surface depends mainly on the slope of the waves rather than on the

height. The form drag coefficient depends on the curvature of the waves. Both the slope and the curvature can be obtained by photographing the sun's glitter on the water surface. *Subject Headings:* **1. Sea surface roughness 2. Wind stress 3. Ocean wave measurement.** —*A.A.*

6.2–220 551.556:551.481

Sauberer, F., **Der Wind-Einfluss auf die Trübung des Neusiedlersees.** [Wind influence on the turbidity of Neusiedler Lake.] *Wetter und Leben*, 5(11/12):200–203, Dec. **1953.** 3 figs. **MH-BH**—The influence of wind upon the transparency of the water of Neusiedler Lake is investigated on the basis of a three years' record of wind data including distribution of wind frequency and intensity and water transparency measurements made twice daily since April 1, 1952. The author presents curves showing the diminution of transparency with wind direction; lengthwise winds caused greater turbidity than cross-winds. *Subject Headings:* **1. Wind effects on lake turbidity 2. Lake turbidity 3. Neusiedler Lake, Austria.**—*I.L.D.*

6.2–221 551.556:551.465

Stommel, Henry, **Circulation in the North Atlantic Ocean.** *Nature*, London, 173(4411): 886–888, May 15, **1954.** 2 figs., 5 refs. **DLC**—Describes results of recent research on the Gulf Stream, including new instruments and methods. Two charts are given showing a meandering structure, with a wave-length of 200 km and a phase velocity of 11 mi/day, and a very large meander developing into a detached eddy of cold water on the warm side of the main current. There is evidence of a seasonal variation of transport from 76 million m^3/sec in Oct.–Nov. to 93 million. The theory of the wind-driven circulation is briefly summarized. *Subject Headings:* **1. Wind driven currents 2. Gulf Stream 3. Atlantic Ocean.**—*C.E.P.B.*

6.2–222 551.556:69

Thom, Herbert C. S. (*Chief Climatologist, U. S. W. B.*), **Frequency of the return of maximum wind speeds.** Prepared in cooperation with the Naval Aerology Branch. [June 15, **1953.**] 10 p. 3 figs. (some fold.), 8 refs., 14 eqs. Mimeo. **DWB**—A formula is presented for determining the probable maximum wind speed, which engineering structures or buildings would need to withstand, from maximum wind speed data for each day, month or year. A maximum value probability paper (graph) for Fisher-Tippett type II distribution is presented, with annual extreme wind speeds observed at Fort Wayne, Indiana plotted, and a smooth curve drawn to show probability of winds from 30 mph to 100 mph. *Subject Headings:* **1. Wind load on structures 2. Wind speed frequencies 3. Probability of wind extremes 4. Fort Wayne, Indiana.**—*M.R.*

6.2–223 551.556:551.311.3

Zingg, A. W. (*U. S. Bureau of Plant Industry, Soil and Agr. Engr., Manhattan, Kansas*) **The wind erosion problem in the Great Plains.** *American Geophysical Union, Transactions*, 35(2):252–258, April **1954.** 2 figs., table, refs. Glymph, Louis M., Jr., **Discussion,** p. 258. **MH-BH**—This is a review paper summarizing briefly current knowledge and philosophies relative to the wind erosion problem in the Great Plains area of the United States. The principal types of wind erosion experienced by the area are identified as "selective erosion" and "mass removal." Present and historical aspects of the problem are outlined. An equation expressing the regimen of soil removed by wind tunnel tests for variations of vegetative cover on soils of different structure and surface roughness is presented. Climatic variation and chance occurrence of adverse combinations of climatic factors are cited as fundamental to the problem. The principles involved and methods used for abatement of the problem are discussed. The needs for climatic, soil, crop, tillage, and erosion control practice research for the development of adequate wind erosion control measures of practices are cited. *Subject Headings:* **1. Wind erosion 2. Great Plains, United States. I. Glymph, Louis M., Jr.**—*Author's abstract.*

6.2–224 551.556.2:551.311.3:632.1

Sneesby, N. J., **Wind erosion and the value of shelter-belts.** *Great Britain. Ministry of Agriculture, Journal*, 60(6):263–271, Sept. **1953.** **DA**—Wind erosion and soil drifting is a

serious problem in East Anglia, especially in late March and April. After considering grassing and claying, author discusses windbreaks, favoring good high hedges instead of tree belts as the latter take up too much valuable fenland and are slow to mature. On the sandy Breckland a disadvantage is the shelter provided to rabbits. *Subject Heading:* **1. Shelter-belts.**—*C.E.P.B.*

6.2–225 551.556.4:632.9:633.491

Waggoner, Paul E. (*Conn. Agri. Exp. Station*), **Distribution of potato late blight around inoculum sources.** *Phytopathology*, Ithaca, 42(6):323–328, June **1952.** 3 figs., 12 refs. **DA**—It is shown that the greatest extension of potato blight lesions around inoculation sources are in the directions of most frequent unobstructed air movement. Diagrams of frequencies of wind direction and corresponding blight spread are presented. *Subject Headings:* **1. Potato blight 2. Wind effects.**—*I.L.D.*

UPPER AIR WINDS

See also: **Mean winds** (Korshover), 6.2-41; **Jet stream analysis** (McClellan), 6.2-72; **Subtropical jet stream** (Bannon), 6.2–127; **Transatlantic crossing in a jet stream** (Davis), 6.2-128; **Jet stream** (Dursi Moreau), 6.2-129; **Jet streams** (Faust), 6.2–130; **Jet stream research** (Harding), 6.2-131; **Jet streams and frontal zones** (Hille), 6.2-132; **Null layer effect and jet streams** (Hollmann), 6.2-133; **"Jet stream" under study** (Current Sci.), 6.2–134; **Jet stream variations** (Aeroplane), 6.2–135; **Jet stream analysis** (Riehl, Maynard), 6.2–136; **Wave-cloud formation** (Tillotson, Colson), 6.2-137; **High level turbulence** (Hislop, Davies), 6.2-199; **Air turbulence** (Hyde), 6.2–200; **High level turbulence** (Kuettner), 6.2–204; **High level turbulence** (Ulrich), 6.2–207; **Condensation nuclei** (Schöne), 6.2–245.

6.2–226 551.557:629.13

Cropper, E. W., **The accuracy of dead reckoning in air navigation.** Institute of Navigation Journal, London, 7(2):210–211, April **1954.** 2 refs. **DLC**—Describes preliminary steps of a working party investigation of errors due to inaccurate wind forecasts and change of wind vector with time and distance. *Subject Heading:* **1. Aerial navigation.**—*C.E.P.B.*

6.2–227 551.557:551.510.535:551.590.25

*Manning, L. A.; Peterson, A. M. and Villard, O. G., Jr., **Ionospheric wind analysis by meteoric echo techniques.** *Journal of Geophysical Research*, Wash., D. C., 59(1):47–62, March **1954.** 8 figs., 6 refs., table, 25 eqs. Also issued as Stanford Univ. Electronics Research Laboratory, Contract N6onr-251, Task 7(NR 073-360), Technical Report, No. 60, Feb. 15, **1953.** 29 p. 8 figs., table, 6 refs., eqs. **DWB**—The meteoric method for finding the velocities of winds in the lower E-region is extended. The previously given procedure for finding vector-average wind is shown to be unaffected by the presence of turbulent wind components. A new procedure is worked out for finding root-mean-square values of the horizontal and vertical wind components. By looking at the statistics of the reduction procedures, estimates of the accuracies of the method are found; the sources of error are discussed. Relationships between sample size and accuracy are given. Typical results of the methods are presented. *Subject Headings:* **1. Ionospheric analysis 2. Meteor echo techniques. I. Stanford Univ. Electronics Research Laboratory II. Contract N6onr-251, Task 7.**—*Authors' abstract.*

6.2–228 551.557.31:525.6

Johnson, D. H., **Solar tides in the lower stratosphere.** *Nature*, London, 174(4425):363–364, Aug. 21, **1954.** 3 figs., 3 refs. **DWB**—Periodic diurnal and semidiurnal variations of wind velocity at 100 mb over British Isles are represented by vector diagrams and variations of S and W components by:

$$100\ \mathrm{S} = -54\cos(\theta + 32°14') + 67\cos(2\theta + 44°24')$$
$$100\ \mathrm{W} = \ \ 51\cos(\theta + 84°21') + 51\cos(2\theta - 29°3'\ ).$$

Subject Headings: **1. Atmospheric tides 2. Upper air wind variations.**—*C.E.P.B.*

6.2–229 551.557.31(54)

Parthasarathy, S. and Narayanan, H. (*Meteorological Office, Poona*), **The diurnal variation of upper winds over the Indian sub-continent.** *Indian Journal of Meteorology and Geophysics*, 4(3):205–219, July **1953.** 20 figs., 3 tables, 7 refs. **MH-BH**—The diurnal variation of upper winds over the Indian sub-continent has been examined with reference to the normals of upper winds from pilot balloon ascents taken near about 0200, 0700 and 1500 IST up to 6 km. This has been accounted for as mainly due to differential heating or cooling of the various parts of the country associated with the vertical movement of air due to convection and an expression has been derived connecting diurnal variation with the differential heating and vertical movement. Differential heating of land and sea areas is found to affect winds up to 3 km in general and up to 6 km in April, the effect in the lower levels being more prominent in the west coast than in the east coast. Some notable instances of the diurnal variation which have an effect on the climatology of the various regions are also considered. *Subject Headings:* **1. Upper air wind variations 2. Diurnal wind variations 3. India.**—*Authors' abstract.*

AQUEOUS VAPOR, HYDROMETEORS AND HYDROLOGY

HUMIDITY AND EVAPORATION

See also: **Psychrometric tables** (USWB), 6.2–28; **Precipitable water template** (Schowalter), 6.2–34; **U-V water vapor absorption** (Johannin-Gilles), 6.2–172; **Water vapor heat transfer** (Yosida), 6.2–248.

6.2–230 551.571.3:551.524.31(595,548.7)

*Tunnell, G. A., **Humidities associated with maximum and minimum temperatures in south-east Asia.** *Meteorological Magazine*, London, 83(987):271–275, Sept. **1954.** 2 tables. **DWB**—A table based on 2–4 years of data for NE and SW monsoons and transition months at Changi, Tengah and Butterworth in Malaya and Trincomalee and Negombo in Ceylon gives mean daily maximum and minimum temperatures, times of occurrence and most frequent and mean ranges of relative humidity associated with them. Causes of differences between stations and seasons are discussed. *Subject Headings:* **1. Humidity variations 2. Diurnal temperature variations 3. Malaya 4. Ceylon.**—*C.E.P.B.*

6.2–231 551.573:551.482

Awłasiewicz, Witold, **Sposob okreslania odpływow rzek przy pomocy mapy parowania.** [Method of determining river flows on the basis of the map of evaporation.] *Gospodarka Wodna*, Warsaw, 13(6):202–205, June **1953.** 3 figs., 4 tables, 9 refs. **DLC**—Describes a quick method to determine the flow of small and medium rivers, especially those lacking hydrometric installations. It is based on the estimation of mean evaporation calculated by the author for 44 stations in Poland. This calculation of mean evaporation is based on the diagram drawn up by KUZIN in 1934 on the basis of the relationship between the value of total evaporation and mean monthly air temperature. Having the data on evaporation at a given point and mean precipitation data for a period of many years, it is possible to derive from the equation $H=P-S$ the mean yearly flow. Tables and two maps accompany the analysis. *Subject Headings:* **1. River flow 2. Evaporation estimation 3. Poland.**—*A.M.P.*

6.2–232 551.573:551.311.12

Heinsheimer, Georg J., **Die Eispenitentes des Glaciar Derecho in der Cordillera von San Juan (Argentinien).** [The ice penitents of the Derecho glacier in the Cordillera of San Juan (Argentina).] *Zeitschrift für Gletscherkunde und Glazialgeologie*, 2(1):14–24, **1952.** 3 figs., 8 photos, 22 refs. **DLC**—At a height of 4100 m in 31°S inclined ice pillars 10–15 m high are formed in series running E–W. The main cause is the distribution of solar radiation on small irregularities. Other factors are slope of ground, movement of ice, detritus, cloud and mist, heavy rain and a process of sublimation and condensation. *Subject Heading:* **1. Glacial ablation.**—*C.E.P.B.*

6.2–233 551.573

Hickman, K. C. D., **Maximum evaporation coefficient of water.** *Industrial and Engineering Chemistry*, 46(7):1442–1446, July **1954.** 2 figs., table, 8 refs. **DWB.** Also: Hickman, K. C. D. and Torpey, W. A., **Evaporation of resting water.** *Ibid.*, 46(7):1446–1450, July **1954.** 8 figs., 7 refs., 3 eqs. **DWB**—1) The concensus, backed by different experiments, has been that not more than one molecule of water in 25, approaching the surface from either side, actually merges with the interfacial layer. This paper suggests that it is unreasonable to expect a fixed or characteristic evaporation coefficient for water (or other liquid). The relevant question, and one that does not yet appear to have been answered satisfactorily, is whether there are conditions at which the evaporation coefficient of water is unity. This paper answers the question affirmatively and thus removes water from the class of anomalous liquids, as to evaporation. 2) Experiments described in this paper suggest that torpidity of water (resulting in very low evaporation coefficient) is due to a layer of chemical impurity on the water surface. *Subject Heading:* **1. Evaporation rate.**—*From author's introduction, G.T.*

6.2–234 551.573:551.311.12 551.511

Hoinkes, H. (*Innsbruck, Inst. of Met. and Univ. of Geophysics*), **Wärmeumsatz und Ablation auf Alpengletschern. II. Hornkees (Zillertaler Alpen) Sept. 1951.** [Heat balance and ablation on the alpine glaciers. II. Hornkees (Zillertaller Alps), Sept. 1951.] *Geografiska Annaler*, Stockholm, 35(2):116–140, **1953.** 6 figs., 10 tables, 10 refs. **DWB**—A very detailed ablation study on the basis of measurements extended over 7 days in Sept. 1951. The total ablation was 302 mm water equivalent, compared with 312 mm computed from the heat balance. Absorption of radiation gave 58%, convective heat 2%, condensation heat 12%, heat supply by rain 0.3%, while the evaporation was negligibly small. The theory of heat balance was applied to its full extent, including even the new theory of exchange, proposed by LETTAU for a nonadiabatic atmosphere. *Subject Headings:* **1. Ablation 2. Heat balance 3. Glacier studies 4. Zillertaler Alps, Austria. I. Lettau, H.**—*A.A.*

6.2–235 551.573:551.577.3

Penman, H. L., **The physical basis of irrigation control.** From *International Horticultural Congress, 13th*, **1952,** *Report.* 12 p. fig., 4 tables, 14 refs., eqs. Abstracted from reprint. **DA**—The physical principles of evaporation (energy supply, saturation deficit) are set out for open water in a series of equations involving other weather data. Transpiration from crops is more difficult to calculate but can be related to evaporation from water by a conversion factor E_T/E_0. This is analyzed theoretically for short-crops and orchards. Calculated transpiration from an orchard with clover ground cover at Tatura, Victoria, agrees with estimated values. An appendix lists symbols and basic formulas. *Subject Headings:* **1. Evaporation theory 2. Evapotranspiration.**—*C.E.P.B.*

6.2–236 551.573(71)

*Robertson, George W. (*comp.*), **Evaporation measurements at branch units of the Experimental Farms Service throughout Canada.** Ottawa, Experimental Farms Service, **1953.** 19 p. mostly tables. **DWB**—Evaporation data for 29 stations in Yukon, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island are presented as averages for each month (May to Sept.), and actual data for each month of each year. Several stations have records from 1922–1952, inclusive. In addition, the coordinates, mean temperature, total average rainfall and hours of sunshine are given for each station. The details of construction, exposure, installation and operation of tanks are given. *Subject Headings:* **1. Evaporation data 2. Canada. I. Canada. Experimental Farms Service, Ottawa.**—*M.R.*

6.2–237 551.573 551.508.72

Sanderson, Marie, **Measurement of evaporation in Canada.** *I.U.G.G. International Association of Scientific Hydrology, Brussels*, **1951,** [*Transactions*], 3:474–479. 2 tables, 5 figs., 6 refs. **DWB**—Report on 4 years of experience with the potential evapotranspirometer designed by THORNTHWAITE, testing his evapotranspiration formula. Data for the summer

months, obtained at the Toronto (43°N) and Norman Wells (65°N) installations, show good agreement with computed values. *Subject Headings:* **1. Evapotranspirometers 2. Evapotranspiration 3. Thornthwaite's method 4. Toronto, Canada 5. Norman Wells, Canada.**—*A.A.*

6.2–238 551.573(713)

*Sanderson, Marie, **Measuring potential evapotranspiration, Toronto 1947, 1948, 1949.** *Johns Hopkins Univ. Laboratory of Climatology, Publications in Climatology,* 7(1):69–83, **1954.** 7 figs., 3 tables, append. p. 78–83. **DWB**—Daily values of computed and measured potential evapotranspiration (4 tanks), temperature and precipitation are given for the vegetation period of each year. The surface was covered with timothy grass or was bare. A good general agreement with THORNTHWAITE's formula was found, even for bare soil, if sufficiently wetted. *Subject Headings:* **1. Potential evapotranspiration 2. Evapotranspiration data 3. Thornthwaite's method 4. Toronto, Canada.**—*A.A.*

6.2–239 551.573

*Smith, G. W., **Evapotranspiration in Trinidad, B.W.I.** *Johns Hopkins Univ. Laboratory of Climatology, Publications in Climatology,* 7(1):125–139, **1954.** 6 figs., 6 tables, append. p. 136–139. **DWB**—Considerable effort was made to achieve homogeneous measurements of potential evapotranspiration. Besides mechanical troubles with the maintenance of a constant water level, it was found that the results depend very much on the depth of the water level. Twenty cm instead of 50 cm, originally suggested by MATHER (*see* 4.2–179, Feb. 1954, *MAB*), was adopted. The temperature throughout the year is fairly uniform in Trinidad so that the errors of THORNTHWAITE's formula, which neglects humidity, are closely related to evaporation measured by an atmometer (correlation 0.87). Daily values of temperature, precipitation, computed and measured evapotranspiration (4 tanks) or partly evaporation from bare soil are presented for Oct. 1952 to Dec. 1953. Location of the station: 10°38′N, 61°24′W. *Subject Headings:* **1. Potential evapotranspiration 2. Evapotranspiration data 3. Thornthwaite's method 4. Trinidad, B.W.I.**—*A.A.*

6.2–240 551.573:551.579

*Thornthwaite, Charles W. (*Dir. Lab. of Climatology, Johns Hopkins Univ.*), **Evapotranspiration in the hydrologic cycle.** (In: U. S. Congress. House. Committee on Interior and Insular Affairs, **Physical and Economic Foundation of Natural Resources,** 2:25–35, **1952.** 2 tables, 5 figs., 18 refs.) **DWB**—Presents maps of annual potential evapotranspiration and moisture regions in the United States, as well as the relation between precipitation and potential evapotranspiration at four selected stations. An example is shown how to compute the daily water budget of the soil. The available water in the root zone is about 4″, almost independent on the kind of crop and soil. *Subject Headings:* **1. Evapotranspiration 2. Hydrologic cycle 3. Soil moisture 4. United States.**—*A.A.*

CONDENSATION

See also: **Cloud physics** (Bricard), 6.2–1; **Weather modification in relation to water supply** (Krick), 6.2–88.

6.2–241 551.574.1

Kientzler, C. F.; Arons, A. B. and Blanchard, D. C., **Photographic investigation of the projection of droplets by bubbles bursting at a water surface.** Woods Hole Oceanographic Institution, Contract Nonr-798(00) (NR-082-124), Technical Report, No. 6, Oct. **1953.** 11 p. 9 figs., 8 refs. **DWB**—Bubbles of air on reaching the air-water interface burst and eject liquid droplets into the air to heights large compared to their diameter. Photographic evidence is introduced to prove the existence of a jet of liquid which, upon breaking up, produces these droplets. The jet is shown to be produced by the collapse of the bubble cavity. The droplets are found to be nearly one tenth of the bubble size for the range investigated (0.2 to 1.8 mm.) diameter. The droplet producing mechanism is essentially the same for fresh and sea water with oleic acid surface film. The time required for the bubble to burst and the jet

formation to take place is found to be proportional to the bubble size. The sea water droplets produced by this mechanism leave, upon evaporation of the water, salt nuclei having the size range observed by Woodcock (1952). It is suggested that such bursting of bubbles plays an important role in the natural production of air-borne sea-salt nuclei at the sea surface. *Subject Headings:* **1. Saline nuclei 2. Water drops. I. Woods Hole Oceanographic Institution II. Contract Nonr-798(00).**—*Authors' abstract.*

6.2–242 551.574.1

Blanchard, D. C. and Newitt, D. M., **Bursting of bubbles at an air-water interface.** *Nature*, London, 173(4413):1048–1049, May 29, **1954.** 4 refs. **DLC**—Referring to note by Woodcock, A. H. et al, **Giant condensation nuclei from bursting bubbles** (*see item* 5.4–178, April 1954, *MAB*) and Knelman, F., Dombrowski, N. and Newitt, D. M., **Mechanism of the bursting bubbles** (*Nature*, 173:261, 1954), the production of airborne droplets by bursting of bubbles is discussed further. *Subject Heading:* **1. Saline nuclei.**—*C.E.P.B.*

6.2–243 551.574.1:551.593.54

Penndorf, R., **The vertical distribution of Mie particles in the troposphere.** *Journal of Meteorology*, 11(3):245–247, June **1954.** 2 figs., 8 figs., 5 eqs. Also as: *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 25, March **1954. MH-BH**—Vertical distribution of Mie particles (6×10^{-6} to 10^{-4} cm radius) and similar aerosols, obtained by different methods, are plotted. In summer over Central Europe they decrease exponentially up to 4–5 km and then remain nearly constant. Mixing ratio is given by const.$\times$exp $(-0.708\ h)$ up to $h=5$ km, and const$\times$exp$[0.17(h-5)]$ above 5 km. Sources of Mie particles at ground level and at or above tropopause are indicated. *Subject Headings:* **1. Aerosols 2. Mie particles.**—*C.E.P.B.*

6.2–244 551.574.1

Picca, Robert, **Études sur la surfusion de gouttelettes d'eau.** [Studies on the supercooling of water droplets.] *Puy-de-Dôme. Observatoire, Bulletin*, No. 2:33–42, April/June **1954.** 5 figs., 6 refs. **DWB**—The experimental procedure for studying supercooled water droplets involved their collection by the use of spider threads or of plexigum fibers which are placed in a small enclosure cooled by an external sleeve, in which the freezing mixture was composed of acetone and dry ice. The water droplets are produced by introducing humid air into a previously cooled enclosure. The cold chamber is described in detail with the aid of a diagram. Data show that the freezing of water droplets depends upon the diameter of the droplet, its rate of cooling and the duration of its life. A study of the effect of contamination of the threads in the silver iodide upon the droplets shows that if the contaminated fibers are introduced into the chamber cooled previously to -4°C the insufflation of water vapor results in droplets which normally freeze between -4° and -6°C, while if the threads are introduced into the chamber at a temperature of -5°C the insufflation yields droplets which do not freeze. *Subject Headings:* **1. Supercooled water drops 2. Nucleation theory.**—*I.L.D.*

6.2–245 551.574.1:551.524.4 551.555.3:551.574.1

Schöne, V., **Kernzahlmessungen auf dem Brocken.** [Measurements of condensation nuclei on the Brocken.] *Zeitschrift für Meteorologie*, Berlin, 7(9):275–282, Sept. **1953.** 3 figs., 8 tables, 23 refs. Also his: **Kernzahl und freier Föhn auf dem Brocken.** [Condensation nuclei and free föhn on the Brocken.] *Ibid.*, 7(11):343–346, Nov. **1953.** 3 figs., 3 tables, 7 refs. **MH-BH**—On the basis of over 1800 measurements made in the summer and fall of 1950, the author discusses the diurnal variation of nuclei and their relation to air masses, wind direction and speed, as well as to relative humidity. A profile along the slope of the Brocken shows a greater number of nuclei in the valley. In the second article author mentions a sharp decrease of the number of condensation nuclei as the result of the downward movement of an inversion during a high pressure situation over Middle-Europe. Temperature, humidity and radiosonde data verified the occurrence of a free föhn. *Subject Headings:* **1. Condensation nuclei 2. Inversions 3. Topographic effects 4. Free föhn 5. Brocken, Germany.**—*A.A.*

6.2–246 551.574.1

Soulage, Guy, **Sur les noyaux de congelation de l'atmosphère.** [Freezing nuclei of the atmosphere.] *Académie des Sciences, Paris, Comptes Rendus*, 239(1):74–76, July 5, **1954.** fig., 2 refs. **DWB**—Certain atmospheric ice-forming nuclei were investigated. The nuclei become active at a critical temperature of approximately −15°C. They appear to act first as condensation nuclei and then as freezing nuclei, terminating the liquid state of the captured supercooled water. *Subject Heading:* **1. Freezing nuclei.**—*Trans. of author's abstract.*

6.2–247 551.574.1

*Vaughan, Harry C. (*Mass. Inst. of Techn.*), **The spontaneous freezing temperatures of melted snow and of small water drops.** *American Meteorological Society, Bulletin*, 35(2):52–55, Feb. **1954.** 2 tables, 7 refs. **MH-BH**—The spontaneous freezing temperatures of samples of melted snow collected at hourly intervals during several storms are reported. The freezing temperatures were found to range from −8.3 to −16.8°C. In most cases the freezing temperature remained fairly constant over periods of several hours. Gross variations in the pollution of the lower atmosphere caused no obvious effect on the observed freezing temperatures. It is suggested that the observed freezing temperatures of small drops were made with a technique such that all drops were formed from the same bulk sample without any danger of contamination. In all cases the freezing temperatures of the drops were well below that of the bulk water. The freezing temperature decreased with decreasing drop size but there was a relatively large variation for a given drop size. *Subject Headings:* **1. Spontaneous freezing 2. Freezing nuclei.**—*Author's abstract.*

6.2–248 551.574.1:551.573:551.578.46

Yosida, Zyungo, **Heat transfer by water vapor in a snow cover.** *Low Temperature Science, Sapporo*, Japan, 5:93–100, **1950.** 4 figs., eqs., 3 refs. In Japanese; English summary p. 100. **DWB**—In the presence of a temperature gradient in a snow cover, water vapor evaporates from an ice particle, diffuses in direction of decreasing temperature and condenses on opposite surface of next particle. The existence of such a transfer of water vapor was confirmed by microscopic observation of the deformation of snow particles. The diffusion coefficient of water vapor in snow was also determined experimentally. The heat conveyed by diffusion of water vapor was found to be

$$2.2\times10^{-4}\frac{dt}{dx}\ \text{cal/cm.sec°C},$$

where dt/dx is the temperature gradient. *Subject Headings:* **1. Thermal balance of snow 2. Condensation of water vapor 3. Water vapor heat transfer 4. Snow cover.**—*M.R.*

6.2–249 551.574.42 551.524.37

Bider, Max, **Glatteis und Strassenglätte.** [Glaze and slippery streets.] *Leben und Umwelt*, 10(6):127–132, March **1954.** 3 figs., 2 tables. **DLC**—In Switzerland 9% of traffic accidents in 1952 were due to slippery streets, mainly icy. One cause is glaze, frequency of which at different air temperatures is tabulated (mainly −4 to +1°C). Cases above 0°C are due to cold ground. Counter measures are discussed. Slippery streets due to freezing of rain or melted snow were most frequent at air temperatures of −3 to +1°C. *Subject Headings:* **1. Glaze 2. Icy roads.**—*C.E.P.B.*

6.2–250 551.574.42:551.588.2

Ross, S. M., **Lowering of freezing level over a mountain range.** *Meteorological Magazine*, London, 83(987):275–277, Sept. **1954.** 2 figs., 2 refs. **DWB**—On Dec. 13, 1953, ice was being deposited on windward surfaces at 4000 ft on Cairngorm Mountains, Scotland, though upper air ascents gave freezing level about 6500 ft. The lowering is attributed to forced ascent of air over the mountain range. *Subject Headings:* **1. Icing 2. Topographic effects.**—*C.E.P.B.*

6.2–251 551.574.7

Fraser, D., Rush, C. K. and Baxter, D., **Thermodynamic limitations of ice accretion instruments.** *American Meteorological Society, Bulletin*, 34(4):146–154, April **1953.** 6 figs., eqs. Also as: *Canada. National Aeronautical Establishment, Ottawa, Laboratory Report,*

LR-32, Aug. 22, 1952. 12+3+5 p. 6 figs., 6 refs. **DWB**—The convective and evaporative heat losses by accretion of ice on an unheated body are limited, therefore it is impossible to use ice accretion instruments for measuring high values of water concentration in icing of clouds. The limits of instrument application were calculated for the rotating cylinder at normal and high flight speeds. It was found that the calculated values are in good agreement with experimental data. Therefore the thermal method should be preferred for measurement of high water concentration. For other cases the ice accretion instrument can be used with greater accuracy. *Subject Headings:* **1. Icing measurement 2. Observation techniques.**—*N.T.Z.*

6.2–252 551.574.7

Hurst, G. W. and Shaw, J. B., **Aircraft icing at very low temperatures.** *Meteorological Magazine*, London, 83(987):280–281, Sept. **1954.** table, 3 refs. **DWB**—Hoar frost was formed on aircraft in clear air at 40,000 ft. Temperatures −53 to −68°C, varying by 6°C in 50 mi, and it is suggested that condensation was due to aircraft passing rapidly from cold to warm air. Two other cases of icing at −61° and −65°C are mentioned, showing that free water can exist at −65°C. *Subject Heading:* **1. Icing of aircraft.**—*C.E.P.B.*

FOG

See also: **Smoke and smog,** 6.2–104; **Sunlight forests on foggy days** (Harada), 6.2–166.

6.2–253 551.575.2(45)

*Hesse, W., **Nebel- und Sichtverhältnisse in Ober- und Mittelitalien.** [Fog and visibility conditions in northern and central Italy.] *Geofisica Pura e Applicata*, 27:179–189, **1954.** 13 figs., table, 2 refs. German, English and Italian summaries p. 179–180. **MH-BH**—Diurnal fog, wind and visibility data are analyzed for Milan (1931–38) and Rome (1936–39) to show comparative conditions inland and on the coast during different seasons. Conditions at other places in northern Italy are analyzed and charted to show local differences. The foggiest region is around Bologna, but the entire Po Valley had a high frequency of radiation fog in winter, whereas Rome had little fog (except advection fog which persists in the daytime). Venice is usually foggier than Rome. Annual variations and variations with wind direction are also analyzed. *Subject Headings:* **1. Fog distribution 2. Fog frequencies 3. Visibility 4. Italy.**—*M.R.*

CLOUDS

See also: **Cu and CuNb clouds** (Frost), 6.2–38; **Wave-cloud formation** (Tillotson, Colson), 6.2–137; **Scattering of solar energy** (Fritz), 6.2–170.

6.2–254 551.576.11:629.13

Hornbrey, N. F., **Circular condensation trails.** *Meteorological Magazine*, London, 83(987):281–282, Sept. **1954.** figs. **DWB**—A double condensation trail broke down into a row of regularly spaced rings. It is suggested that the "double contrails were formed as counter-rotating vortices which were being broken down by the regular wave motion of the ambient air into dimensions best suited for forming annular vortices." *Subject Headings:* **1. Condensation trails 2. Vortexes.**—*C.E.P.B.*

6.2–255 551.576.11:629.13

Malsch, W., **Merkwürdige Wolkenlöcher.** [Remarkable cloud gaps.] *Meteorologische Rundschau*, 7(9/10):188, Sept./Oct. **1954. DWB**—On March 13, 1954 two nearly circular holes appeared in an Ac sheet N of Karlsruhe. Attributed to a number of plane flights above speed of sound. *Subject Heading:* **1. Distrails.**—*C.E.P.B.*

6.2–256 551.576.11:629.13

Phillips, P. E., **Distortion of condensation trail at a frontal surface.** *Meteorological Magazine*, London, 83(987):279–280, Sept. **1954.** photo. **DWB**—Photo shows a marked double kink in a trail over Wick, Scotland. It is attributed either to slight ascent and descent

through a wind discontinuity or to a "wrinkle" in the front. *Subject Heading:* **1. Condensation trails.**—*C.E.P.B.*

6.2–257 551.576.11:551.43 551.515.4(234.3)

Tucker, G. B., **Mountain cumulus.** *Weather*, 9(7):198–200, July **1954.** 3 figs., 3 photos. Also: Douglas, C. K. M., **Thunderstorms in the Alps.** *Ibid.*, 9(9):287, Sept. 1954. **MH-BH**—1) Sketches and photos show development of cumulus during the morning, rising from isolated *fr-cu* on Alpine slopes facing south to a continuous cloud over the ridge. An explanation is illustrated by a tephigram. 2) Account of synoptic situation of storm of July 29, 1925, referred to in TUCKER's article, and genesis of Alpine thunderstorms. *Subject Headings:* **1. Cumulus cloud formation 2. Orographic effects 3. Alpine thunderstorms.**—*C.E.P.B.*

PRECIPITATION

See also: **Double-mass curves analysis** (Weiss, Wilson), 6.2-25; **Precipitation averages** (Keri), 6.2-29; **Rainfall data analysis** (Schneider-Carius), 6.2-35; **Drought, France—1952** (Gouache), 6.2–179; **Irrigation control** (Penman), 6.2–235; **Proceedings** (Rio Grande Com.), 6.2–288.

6.2–258 551.577:621.396.9

Robinson, N. P., **The propagation of 8 mms. wavelength radiation through rain, snow, hail and fogs.** *Great Britain. Ministry of Supply, Technical Note*, No. 191, **1953.** 11 p. 4 plates, table, 25 refs., 12 eqs. Mimeo. **GB-MO**—Attenuation by rain was approximately proportional to precipitation rate (0.26 db/km/mm/hr) over range of 1–11 mm/hr. Echo intensity agreed well with theoretical values found by J. W. and D. RYDE. Echo intensity from fogs was too low to be detected but attenuation was of same order as that predicted by theory. Attenuation through a hailstorm may be considerable. Moist snow caused attenuation 2½ times that of rain at same precipitation rate. Echo intensity from dry snow was 14–19 dbs less, and of rain 2-8 dbs less than from melting band (bright band). *Subject Headings:* **1. Radar precipitation echoes 2. Radar attenuation.**—*C.E.P.B.*

6.2–259 551.577.3:523.74

Karapiperis, Leon N., **The solar activity and the summer rainfall in the Mediterranean.** *Geofisica Pura e Applicata*, 27:174–178, **1954.** 5 figs., table, 10 refs. English and Italian summaries p. 174. **MH-BH**—Using data for 30 stations in Mediterranean, covering 4 to 8 sunspot cycles, several types (a, b, c and d) of relationship between summer rainfall and 11-year sunspot cycle were differentiated ((a) simple, (b and c) double, and (c) triple oscillation). In general the rainfall is at a maximum during sunspot minimum and vice versa. *Subject Headings:* **1. Solar influences on rainfall 2. Sunspot cycles 3. Rainfall variations 4. Mediterranean Region.**—*M.R.*

6.2–260 551.577.33:551.509.67(79)

*†Brier, G. W., **7-day periodicities in May, 1952.** *American Meteorological Society, Bulletin*, 35(3):118–121, March **1954.** 4 figs., 5 refs. **MH-BH**—The succession of rainy weekends in the Eastern States in April and May 1952, mentioned by HAWKINS (1952), was similar to weekly periodicities in rainfall in these states and elsewhere in the U. S. in 1950 and 1951 (LANGMUIR). Analysis of such data and of 700 mb charts for the Pacific Coast region shows that there was a periodicity in occurrence of troughs or LOWS (at that level) to the west of Oregon or Washington, leading to the possible conclusion that the seeding activities in the Northwest were subject to a weekly periodicity because of the weekly periodicity in favorable conditions for seeding success and not vice-versa. *Subject Headings:* **1. Cloud seeding periodicities 2. Rainfall periodicities 3. Cyclone periodicities 4. Pacific Northwest. I. Hawkins, H. F., Jr. II. Langmuir, Irving.**—*M.R.*

6.2–261 551.577.37(759)

*Smith, David B. (*Univ. of Florida, Gainesville*), **Expectancy and intensity of excessive rainfalls at Jacksonville, Florida, 1910–1948.** *Florida. Univ. Gainesville, Engineering*

Progress at the Univ. of Florida, 5(2), Feb. 1951; *Technical Paper Series*, No. 57. unpaged. 3 figs., 5 tables, 6 refs. Reprint from *Florida Engineering Society, Journal*, June **1950. DWB**—For such studies as this, long records from a recording rain gage are required; 39 years of such record are available for Jacksonville, Florida (1910–1948). Detailed data on the expectancy of various intensities of rainfall in various short periods of time (5 min to 2 hrs) are tabulated in various ways and shown graphically. Time after beginning of storm that a certain amount of rain would fall once in 1, 3 and 6 months and 1, 2, 3, 4, 6, 8 and 10 years shown on nomogram based on formula derived from plot of 39 years of data. *Subject Headings:* **1. Rainfall depth duration data 2. Rainfall intensity duration data 3. Long period records 4. Jacksonville, Florida.**—*M.R.*

6.2–262 551.501.45:551.577

McQuigg, James (*U. S. W. B., Wash., D. C.*), **A simple index of drought conditions.** *Weatherwise*, 7(3):64–67, June **1954.** figs. **MH-BH**—Drought has been defined in several ways for objective statistical correlations, but most methods fail to agree with actual severity of drought. The antecedent precipitation index (API) is obtained by accumulating the current day's precipitation and a figure which equals 70% of the previous day's index. Thus, during periods of absolute drought the initial index will decrease asymptotically to a negligible amount in 2 or 3 weeks even if the ground is saturated by an accumulation of 3 or 4 in. at first. Examples are given for eastern U. S. on April 5 and 26, 1954, and data are computed and graphed for 3 stations in Missouri, Iowa and South Dakota, respectively, showing probability of occurrence of minimum API during the year (10, 30, 50 and 75% probability lines) and the cumulative annual frequency of daily API values at the 3 stations. The API correlates well with soil moisture conditions at Ithaca, N. Y. (1940). *Subject Headings:* **1. Drought indexes 2. Antecedent precipitation index (API) 3. Northern Plains 4. United States.**—*M.R.*

6.2–263 551.577.38

Matusiewicz, Józef, **Waïka z susza w świetle nauki radzieckiej.** [Drought prevention according to Soviet science.] *Przegląd Meteorologiczny i Hydrologiczny*, 5(3/4):116–123, **1952. DWB**—The work of the most famous Russian and Soviet scientists such as Dokuchaev, Timiriazev, Voeĭkov, Williams, Kostychev on the origin, nature and expansion of summer drought frequency in the south of the country are reviewed. Preventive measures suggested by them and undertaken by the Soviet Government are described. On the basis of conclusive results achieved by the Soviets in this field, the author introduces a series of suggestions which would improve the fight against droughts in Poland. *Subject Headings:* **1. Drought prevention 2. Poland.**—*A.M.P.*

6.2–264 551.577.38:551.555.8

*Warn, G. Frederick (*Texas Tech. Coll.*), **Drought and dust on the plains.** *Weatherwise*, 6(3):67–71, June **1953.** 3 figs., 2 tables. **MH-BH**—Conditions attending drought in the Texas-Oklahoma-Kansas area in the past and contributing to a similar situation at present are reviewed. With the basic drought conditions prevailing, the situation is ideal for dust storms to occur. The prolonged dust storms occur with prefrontal troughs and SW–W winds over the plains. Cold front (NW–N winds) dust storms are more violent but not so prolonged. The humidity, wind, visibility, height to which dust is carried, etc. for each 15 min during a typical cyclonic dust storm followed by a cold front dust storm at Lubbeck, Texas on March 2, 1952 from 9:30 A.M. to 10 P.M. are tabulated and discussed. Steep lapse rates and turbulence are essential for severe dust storms. *Subject Headings:* **1. Dust storms 2. Drought, Texas (1953) 3. Texas 4. Great Plains, U. S.**—*M.R.*

6.2–265 551.577.38

Winston, Jay S. (*Ext. Fore. Sec., U. S. W. B., Wash., D. C.*), **The weather and circulation of June 1953. The second successive June with record-breaking drought and heat.** *Monthly Weather Review*, 81(6):163–168, June **1953.** 8 figs., 3 refs. **MH-BH**—Temperature and rainfall distribution over the United States were similar to June 1952, one of the worst drought months in history. The 700 mb charts show in both months a well developed continental anticyclone. Other maps show wind speeds and relative geostrophic vorticity at 700 mb,

200 mb contours and the frequency of cyclones and anticyclones in June 1953. *Subject Headings:* **1. Drought, U. S. (1953) 2. United States.**—*A.A.*

6.2–266 551.577.38:551.543

Winston, Jay S., **The weather and circulation of October 1952—the driest month on record in the United States.** *Monthly Weather Review*, 80(10):190–194, Oct. **1952.** 5 figs., table, 5 refs. **MH-BH**—Data on total precipitation in Oct. 1952, and on departure from normal are presented for every state in the U. S. Development of the drought is described and damages caused are mentioned. The circulation pattern connected with the drought is analyzed. It was dominated by the persistence of a sinusoidal wave pattern with an abnormally strong ridge over the Western mountains and an unusually strong northerly flow between that ridge and the trough over the East. Upper air charts are presented. Temperature anomalies are also discussed. *Subject Headings:* **1. Drought 2. Pressure distribution 3. United States.**—*G.T.*

6.2–267 551.577.38(439.1)

Zách, Alfréd, **A nyári aszály.** [Summer drought.] *Természet és Technika*, Budapest, 111(10):636–638, Oct. **1952.** figs. **DLC**—After mentioning some historic accounts of famine-causing droughts in Hungary (107 years with famine were reported between 930 and 1876), the author discusses precipitation conditions during the last 50 years. A chart on average July precipitation distribution in Hungary, one on precipitation distribution in July 1952 and one on the liability of different areas of the country to become subject to drought are presented. Weather development during the dry summer 1952 is described. The author takes a firm stand against false popular notions stimulated by the occurrence of drought. Foremost among such misinterpretations is the erroneous belief that the Hungarian plains are turning into desert land because river channels in east Hungary were improved and marsh lands drained. *Subject Headings:* **1. Drought 2. Hungary.**—*G.T.*

6.2–268 551.577.61:656.2

Kimura, T. and Yoshioka, S., **On railway accidents due to bad weather.** *Journal of Meteorological Research*, Tokyo, 4(9):723–727, Feb. **1953.** 5 tables. In Japanese; English summary p. (44). **MH-BH**—Railway accidents due to bad weather (1927–1949) were investigated in the Fukushima Railway Operating Division. The following results are obtained: 1. Railway accidents are almost invariably due to heavy rain or snowfall. 2. Among three types of synoptic patterns associated with heavy rainfall (typhoon type, cyclone type and front type patterns), typhoon type situations cause the most severe accidents. 3. With precipitation amounts exceeding 70–80 mm per day the danger of accidents becomes extremely acute. 4. Accidents due to snow are likely when the thickness of the snowcover is over 20 cm or when snowslides occur. *Subject Headings:* **1. Precipitation effects 2. Railway accidents.**—*Authors' abstract.*

RAIN AND SNOW

See also: **Snowdepth measurement** (Munn), 6.2–26; **Chemical composition of rainwater** (Mordy), 6.2–97; **Water vapor heat transfer** (Yosida), 6.2–248.

6.2–269 551.578.1

†Brown, H. E. and Thomas, C. F., **Rainfall in maritime tropical air over the Midwest, July 16–18, 1953.** *Monthly Weather Review*, 81(7):210–216, July **1953.** 14 figs., 12 refs. **MH-BH**—An attempt to explain a peculiar weather situation, when rain fell in the absence of any fronts. The study is based on 850 mb and surface charts, isopleths of trough positions at 500 mb, radiosonde ascents, relative tropospheric cross-section profiles of vertical motion and a 300 mb chart. A theoretical model proposed by BJERKNES and HOLMBOE seems suitable for this case. *Subject Headings:* **1. Nonfrontal rainfall 2. Synoptic studies 3. United States.** —*A.A.*

6.2–270 551.578.11

Bartnoff, Shepard, **Drop-size distribution and visibility in clouds and rain.** Tufts College. Dept. of Physics, Contract AF 19(604)-550, Scientific Report, No. 1, May 15, **1954.** 24 p.

2 figs., 5 tables, 9 refs., 6 eqs. **MH-BH**—The analysis of two sets of drop size distributions in natural clouds and one set of drop size distributions in rain indicates that the coefficient C in Trabert's visibility equations, $V=(C\rho\bar{r})/w$, is a function of the breadth of the distribution. In this equation, $\bar{r}$ is linear mean radius, ρ density, and w liquid water content. As pointed out by ATLAS and BARTNOFF, a more useful equation is found to be $V=(K\rho d_0)/w$, where d_0 is the median volume diameter. The usefulness of the Atlas and Bartnoff equation is supported by the present analysis, which verifies that the coefficient K is nearly independent of the breadth of the drop size distribution and which indicates that the value $K=1.2$, found by ATLAS and BARTNOFF for natural clouds, also holds for rain. A comparison between the values of the parameters of the drop size distributions for clouds and for rain indicates that the rain distributions have a greater spread. The method used by ATLAS and BARTNOFF to compute C and K from the radar reflectivity and a set of theoretical distribution curves is shown to be doubtful, although the present paper verifies the correctness of their results. *Subject Headings:* **1. Drop size distribution 2. Visibility. I. Tufts College. Dept. of physics II. Contract AF 19(604)-550.**—*Author's abstract.*

6.2–271 551.578.11:631.43

Bitiukov, K. K., **Velichina dozhdevykh kapel' i ikh vozdeĭstvie na pochvu.** [The size of rain drops and their effect upon the soil.] *Meteorologiia i Gidrologiia*, No. 6:33–35, **1952.** 2 tables, 6 refs. **DLC**—Report on special experiments during 1948–1950 made at laboratory and Ukrainian irrigation stations of the All-Union Institution of Hydraulic Engineering and Reclamation. The size of rain drops was determined by measuring the diameters of spots on special colored filter paper. The investigations indicated that the mean sizes of rain drops were 0.5–1.5 mm for 87.7% of rain cases, sizes less than 0.5 mm were noticed for 5.1% and sizes more than 1.5 mm for 11.2%. The greatest homogeneity of drop sizes was observed in drizzle. An increase in rain sizes and in range of sizes accompanied increase in rain intensity. For example, the mean size of drops for rain intensity less than 0.03 mm/min was 0.75 mm, but for rain intensity of 0.1 mm/min it increased to 1.4 mm. The greater size of rain drops caused an acceleration of falling drops near the soil surface. The observed speed of falling was about 0.7 m/sec for drops of about 0.2 mm, and about 7.7 m/sec for drops of about 4.0. The big rain drops also had more influence on the physical state of soil surface (pulverization of soil particles, formation of soil crust, etc.). *Subject Headings:* **1. Rain drop sizes 2. Soil mechanics.**—*N.T.Z.*

6.2–272 551.578.41:551.524

Bossolasco, M., **Schneefall und Lufttemperatur.** [Snowfall and air temperature.] *Experientia*, 10(9):365–366, Sept. 15, **1954.** fig., 3 refs. English summary p. 366. **DWB**—Observations on Säntis (2500 m) confirm earlier results on Weissfluhjoch that the peak frequency of snowfall is at a temperature of −11°C. Frequency falls off rapidly below that temperature, but slowly above it up to −4°C. *Subject Heading:* **1. Snow temperatures.**—*C.E.P.B.*

6.2–273 551.578.41 546.212:548

Nakaya, Ukichiro, **Formation of snow crystals.** *U. S. Snow, Ice and Permafrost Research Establishment, Research Paper*, No. 3, Jan. 1954. 12 p. 14 figs., bibliog. p. 12. **MH-BH**—Proposes to distinguish between ice crystals (10–300μ) and snow crystals (500–4000μ). The type of crystals formed depends on temperature and supersaturation. Results for natural snow crystals in this respect, according to GOLD and POWER, agree with artificial snow data by NAKAYA and HANAJIMA. A classification of ice crystals is proposed showing that the types depend on temperature in essentially the same way as the types of snow crystals. The growth of snow crystals is explained by surface diffusion of H_2O molecules from minute droplets coming into contact with the ice surface. Some aspects of artificial seeding are discussed. *Subject Headings:* **1. Snow crystals 2. Ice crystals 3. Cloud physics 4. Cloud seeding.**—*A.A.*

6.2–274 551.578.46

Gerdel, R. W. (*SIPRE, Wilmette, Ill.*), **The transmission of water through snow.** *American Geophysical Union, Transactions*, 35(3):475–485, June **1954.** 10 figs., table, refs. **MH-**

MH-BH—An instrument which makes use of the difference in the dielectric constants of ice and water was constructed and used to detect small changes in the liquid water present in a snow pack. The velocity of a moving front of water through snow and the approximate residual storage of liquid water in the snow pack was measured by means of this instrument. Water transmission rates were found to vary from 0.9 to 24.0 inches of snow per minute. The higher rates were associated with high density snow. The residual storage of liquid water in the snow varied between 0.7 and 5.5 pct with the majority of the measurements showing a residual storage of less than two percent free water or about 0.1 inch of free water per foot of snow. *Subject Headings:* **1. Water content of snow pack 2. Water transmission through snow.**—*Author's abstract.*

6.2–275 551.578.46(436)

*Roller, Maria, **Die Wahrscheinlichkeit einer Schneedecke in typischen Lagen der Ostalpenländer.** [Probability of a snow cover typical to the east Alpine region.] *Austria. Zentralanstalt für Meteorologie und Geodynamik, Jahrbuch,* **1952,** *New Ser.,* 89:D23–D34. 4 figs., 4 tables. **DWB**—Elaborate graphs, tables and analysis of probability of a snow cover of 1, 10, 30 and 100 cm depth and mean snow depth in cm for 5-day periods (average 1901–1950) given for 21 stations which are characteristic of different parts of the East Alps. Special analysis and charts are given for dependence of snow depth probability on height above sea level at different seasons, and even more detailed treatment of data for Lunz am See. *Subject Headings:* **1. Snow depth probability data 2. Altitude effects on snow cover 3. Lunz am See, Austria 4. Austria.**—*M.R.*

6.2–276 551.578.7:551.594.14

Jaffe, Gilbert; Wittmann, Walter and Bates, Charles C. (*U. S. Navy. Hydrographic Off., Wash., D. C.*), **Radioactive hailstones in the District of Columbia area, May 26, 1953.** *American Meteorological Society, Bulletin,* 35(6):245–249, June **1954.** 5 figs., ref. **MH-BH**—At about 2000Z, 26 May 1953 the District of Columbia area experienced a hailstorm in which individual hailstones ranged up to the size of tennis balls. Determinations of the radioactive count of the water content of these hailstones and of roof gravels, indicate that considerable material was brought to earth by the hailstorm from the explosion of the atomic cannon shell 29 hours earlier some 2000 airline miles away in Nevada. The air-flow pattern at upper levels proves to have been around a high-pressure ridge located between the two sites. Such a pattern permitted the arrival of such radioactive material over the District of Columbia area within the time noted. *Subject Headings:* **1. Radioactive hailstones 2. Atomic explosions 3. Upper air flow patterns 4. Washington, D. C.**—*Authors' abstract.*

HYDROMETEOROLOGY

See also: **Flood control controversy** (Leopold, Maddock), 6.2–5; **Soil moisture determinations** (Rowland, others), 6.2–36; **Weather modific. to water supply** (Krick), 6.2–88; **Evapotranspiration** (Thornthwaite), 6.2–240.

6.2–277 551.579:551.588.6

*Veihmeyer, Frank J. (*Univ. of Calif., Davis, Calif.*), **Hydrology of range lands as affected by the presence or absence of brush vegetation.** *I.U.G.G. International Association of Scientific Hydrology, Brussels,* **1951,** [*Transactions*], 3:226–234. 5 figs., 3 tables, 11 refs. **DWB**—Report on extensive hydrological observations made for a number of years on experimental plots. Data for burned plots in comparison with unburned plots show increase in soil moisture, insignificant increase in surface runoff and an increase of 13% in erosion. Author concludes that burning of worthless brushland and the use of a shallow rooted grass cover does not adversely change the infiltration and erosion conditions but actually saves water. *Subject Headings:* **1. Hydrologic cycle 2. Erosion 3. Vegetation influences.**—*A.A.*

6.2–278 551.57](09)(47)

Velikanov, M. A., **Trideset godina sovjetske hidrologije.** [Thirty years of Soviet hydrology.] *Yugoslavia. Hidrometeorološka Služba. Hidrometeorološki Glasnik,* 1(2):79–85, **1948.** In Serbian. **DWB**—Translation from the Russian original published in *Akademiia*

Nauk SSSR, Ser. Geogr. i Geof., Izvestiia, 11(5):419–423, **1947.** Contains a description of the development of hydrologic research during the past 30 years and its present status in the U.S.S.R. *Subject Headings:* **1. Hydrology 2. History of hydrology 3. U.S.S.R.**—*N.T.Z.*

6.2–279 551.579:001

Vocabulaire technique international de l'ingenieur. À propos de "watershed." The engineer's technical and international vocabulary. "Watershed." *La Houille Blanche*, 8(3):418–419, June/July **1953.** In French and English. **DGS**—"Watershed" is adopted for the vocabulary as the meaning for catchment area (in accordance with common usage), although the word originally meant the dividing ridge between drainage areas. *Subject Headings:* **1. Hydrologic terminology 2. Watersheds.**—*A.A.*

6.2–280 551.579:06

Volkov, A. S.; Tarasov, V. V. and Deviatkova, A. V., **O postanovke ucheta effektivnosti gidrometeorologicheskogo obsluzhivaniia narodnogo khoziaĭstva v mestnykh upravleniiakh gidrometsluzhby.** [The method of establishing effectiveness of the hydrometeorological service for the national economy by local administration of the hydrometeorological service.] *Meteorologiia i Gidrologiia*, No. 6:22–24, **1952. DLC**—Discussion about organization and work of services. The authors discussed the system of the hydrometeorological service and method of determining its effectiveness. The necessity of collecting complete references from the customers about the use of information rendered was pointed out. *Subject Heading:* **1. Hydrometeorological services.**—*N.T.Z.*

6.2–281 551.579:519.24

Vorel, Cenek, **Použití metod matematické statiskiky při zpracováni hydrologickeho materialu.** [Application of methods of mathematical statistics to the development of hydrological material.] Prague, Zprávy veřejne slyžby technicke, **1933.** 8 p. 2 figs. Abstracted from reprint. **DWB**—A simple account of the main statistical parameters (extremes, mean mode, median, percentages, etc.) applied to a series of river flow records, and calculation of a smoothed frequency curve. Also published in French as a report to the fifth meeting of the Association of Scientific Hydrology, Lisbon, 1933. *Subject Heading:* **1. Hydrology.**—*C.E.P.B.*

6.2–282 551.579:519.24

Wood, R. H., **A study of variability of inflow to Lake St. John, Quebec, Canada.** *I.U.G.G. International Association of Scientific Hydrology, Brussels*, **1951,** [*Transactions*], 3:378–382. 5 figs., refs. **DWB**—Runoff variability, computed as the logarithm of the geometric standard deviation, was found to be 0.36, in good agreement with values found previously by LANE in the New England states. The catchment area has many lakes and swamps. No attempt was made to correlate rainfall and runoff due to the lack of adequate climatic data. *Subject Headings:* **1. Runoff variability 2. Lake St. John, Canada.**—*A.A.*

6.2–283 551.579:519.24

*Wundt, W., **Die Streuung bei Abflussmittelwerten.** [Standard deviation of mean discharges.] *Wasserwirtschaft*, 42(10):320–324, July **1952.** fig., 2 tables. **DWB**—Elementary discussion of statistical problem for the duration curve of runoff and for the standard deviations of average minimum, mean and maximum runoff. Numerical data are presented for 23 river gage stations in Würtemberg (1921–1940). *Subject Headings:* **1. Runoff variations 2. Statistical techniques 3. Würtemberg, Germany.**—*A.A.*

6.2–284 551.579.1

Apollov, B. A., **Gidrologicheskie issledovaniia v raĭonakh polezashchitnykh polos.** [Hydrological investigations in shelter belt regions.] *Voprosy Geografii*, Moscow, 26:67–72, **1951. DLC**—Discusses evaluation of runoff from small catchment areas without hydrometric observations, considering rainfall amount, percentage of fields, forests, gullies, etc., average slope, infiltration and exposure of slopes. A qualitative method is proposed; no relationships are given. Program of field observations outlined. *Subject Headings:* **1. Runoff evaluation 2. Topographic influences.**—*A.A.*

6.2–285 551.579.1 551.579.5

Flood control and water conservation. *Nature*, London, 172, (4384):823–824, Nov. 7, **1953. DWB**—A leading article calling attention to the frequency of damaging floods in Britain due to heavy rainfall, as shown by those of the past year and by rainfall records, and also to the need for conserving and utilizing all water in view of the growing demand, which is approaching the total supply by rainfall. *Subject Headings:* **1. Water supply 2. Flash floods 3. British Isles.**—*C.E.P.B.*

6.2–286 551.579.1:631.6(569.4)

Irmay, Shragga (*Hebrew Inst. of Tech., Haifa, Israel*), **Water storage in the Negeb.** (In: United Nations Scientific Conference on the Conservation and Utilization of Resources, Lake Success, N. Y., 1949, **Proceedings,** v. 4, **Water Resources,** p. 105–111, **1951.** bibliog. **DWB**—The Negeb is the southern arid part of Israel. The author gives a concise and very instructive climatic description of the four climatic zones in this region. The annual rainfall is mostly below 250 mm. The region has low humidity, high evaporation and heavy dews. Underground water is mostly saline. The irrigation possibilities with low-cost storage reservoirs in the loess of the Negeb are discussed. Importation of irrigation water and a main canal running north–south with a dozen dams and reservoirs is provided. *Subject Headings:* **1. Climatic zones 2. Ground water storage 3. Irrigation 4. Negeb, Israel.**—*A.A.*

6.2–287 551.579.1

Morioka, Japan. Weather Station, **Maximum possible precipitation in the upper Kitakami Basin.** *Journal of Meteorological Research*, Tokyo, 4(10):757–775, Feb. **1953.** 15 figs., 10 tables, 10 refs. In Japanese; English summary p. 48. **MH-BH**—Heavy rains in upper basin of the Kitakami River in Iwate are classified into types according to cause and precipitation pattern. The vertical pressure distribution accompanying air flow over one or two mountain barriers, the resulting wind profile, precipitable water and raindrop paths are analyzed and the resulting precipitation in 1 and 6 hrs at Sendai calculated in terms of surface dew point and wind velocity. From maximum values of these, curves are drawn for maximum possible rainfall in typhoons and frontal storms, giving values of the order of 300 mm. Observed maxima are plotted for comparison. *Subject Headings:* **1. Maximum possible precipitation 2. Kitakami River Basin, Japan.**—*C.E.P.B.*

6.2–288 551.579.1:551.509.5:551.577.38

Rio Grande Water Forecast Committee, **Proceedings, Second annual meeting, April 13, 1951.** Fort Collins, Colorado, Sept. **1951.** 29 p. photos., tables, charts. **DWB**—A collection of papers (some of them abstracted separately) read by members of the U. S. Weather Bureau, Soil Conservation Service, Army Corps of Engineers, Reclamation Service, Geological Survey, etc. Papers dealt with water conservation in the Rio Grande Basin, made urgent by a water shortage arising from deficient rainfall (50% of normal) over that area in 1950. Cloud seeding was considered, but a 45% saving has been affected by improved irrigation methods. *Subject Headings:* **1. Hydrologic forecasting 2. Water conservation 3. Rainfall deficiency 4. Rio Grande Basin. I. U. S. Soil Conservation Service.**—*M.R.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATE OF PARTICULAR PLACES

See also: **Norway pilot,** 6.2–6; **Dispersion of gases in atmos.** (Sutton), 6.2–122.

6.2–289 551.582(434.6/7)

*Busse, W. (*St. Blasien*), **Das Klima des südlichen Schwarzwaldes und der Baar.** [The climate of the southern Black Forest and Baar.] *Germany. Deutscher Meteorologischer Dienst im Französischen Besatzungsbegiet, Wissenschaftliche Arbeiten*, 1:5–16, **1947.** 9 tables, 3 figs. **DLC**—Temperature data for 17 stations in the southern Black Forest are analyzed and tabulated by months (3 times daily, average, extreme, variability, frost, etc.) and critically analyzed. This is a very valuable regional climatic study for the period 1936–1945 (in some

cases records as far back as 1929 were used) for a region around 300 ft above sea level. The discussion is divided into 3 parts: 1) morning temperature, 2) noon temperature and 3) evening temperature. *Subject Headings:* **1. Climate of the Black Forest 2. Temperature variability 3. Black Forest, Germany.**—*M.R.*

6.2–290 551.582:633.51(64,47)

*Grillot, Georges and Iltis, Jean, **Étude de climatologie comparée. Possibilites culturales du contonnier.** [Comparative climatology. The possibilities of cotton cultivation.] *Morocco. Service de la Recherche Agronomique et de l'Experimentation Agricole, Les Cahiers de la Recherche Agronomique*, No. 2:127–139, **1949.** 6+tables (some fold.), bibliog. p. 139. **DWB**—A study of temperature and precipitation conditions at different seasons in the cotton growing region of the U.S.S.R.—based on monthly data for 8 stations in the Crimea, Volga, Ukraine and N. Caucasus regions; and growing season temperature data for 7 stations in Azerbaijan; precipitation data for each month at the station in Turkestan (also sunshine duration at Tashkent); and comparative data for Rabat, Kasba-Tadla, Taroudant and Souk-el-Arba-du Rharb in Morocco. Conclusion is that cotton can indubitably be grown in Morocco, since temperature is equal to that in Turkistan and higher than that in the cotton growing regions of the Caucasus. *Subject Headings:* **1. Climatic analogs 2. Cotton 3. Southern U.S.S.R. 4. Morocco.**—*M.R.*

6.2–291 551.582(262):63

Grillot, Georges (*Service de la Recherche Agronomique, Morocco*), **La zone Mediterraneenne.** [The Mediterranean zone.] *Morocco. Service de la Recherche Agronomique et de l'Experimentation Agricole, Les Cahiers de la Recherche Agronomique*, No. 2:1–13, **1949.** table, diagr., refs. **DWB**—General remarks, with a brief illustrative table, on the climate of the Mediterranean zone which extends from the Sahara to the Pyrenées and from Gibraltar to Iran. The effect of the desert is especially important. The monthly rainfall at Rabat in a very wet year (1927–28), a very dry year (1944–45) and an average crop year (1937–38) is analyzed. Summers are uniformly dry but winters quite variable. Effect of temperature and transpiration is also noted. *Subject Headings:* **1. Climate of Mediterranean areas 2. Agricultural climatology 3. Rabat, Morocco.**—*M.R.*

6.2–292 551.582(64):621.6

Houston, J. M., **The significance of irrigation in Morocco's economic development.** *Geographical Journal*, 120(3):314–328, Sept. **1954.** 7 figs., 3 photos. Discussion p. 327–328. **DWB**—This discussion of the economics of agriculture in Morocco includes a summary of the climate, with charts of rainfall, climatic soil types, irrigation development and river regimes, and their effect on agriculture. *Subject Headings:* **1. Climate of Morocco 2. Irrigation 3. Morocco.**—*C.E.P.B.*

6.2–293 551.582(52)

Suzuki, K., **On the locality of climate in Tokai District.** *Journal of Meteorological Research*, Tokyo, 4(12):993–998, March **1953.** 6 figs., 4 tables. In Japanese; English summary p. 61. **MH-BH**—Local climatic differences are illustrated by graphs and tables of temperature differences (means and extremes) between Nagoya and neighboring places. *Subject Headings:* **1. Local climates 2. Japan.**—*C.E.P.B.*

6.2–294 551.582:629.13(761)

*U. S. Air Weather Service, **Summary of surface weather observations, Army Air Force Weather Station, Maxwell Field, Montgomery, Alabama (32°23′N. 86°21′W, 175 feet elev.).** *U. S. Air Weather Service, Report*, No. 900-13821, Jan. **1945.** 44 p. mostly tables. Declassified. **DWB**—Mean hourly number of and percentage frequency of combinations of ceiling and visibility, of ceiling height, of clear, scattered, broken and overcast sky, of specified speeds and directions of surface winds, of daily maximum, minimum and mean temperature, of daily precipitation amount and frequency and of snow depth for Maxwell Field, Montgomery, Alabama. Tables are reproductions of I.B.M. tabulations for period 1938–44; summary gives percentage of all observations for each element for each month. *Subject*

Headings: 1. **Airport climatology** 2. **Flying weather** 3. **Airways climatic data** 4. **Maxwell Field, Montgomery, Alabama.**—*M.R.*

6.2–295 551.582.2(435.15)

*Huttary, Josef, **Die Klimabeobachtungen in Hamburg von 1935–1949 nach dem Schema des Réseau Mondial.** [Climatic observations in Hamburg for 1935–1949 according to Réseau Mondial method.] *Germany. Deutscher Wetterdienst, Berichte*, No. 9, **1954.** 8 figs., entirely tables. **MH-BH**—Monthly and annual data for Hamburg for period between the last issue of the **Réseau Mondial** and the first issue of the U. S. Weather Bureau publication **Monthly climatic data for the world.** The data are tabulated in the form used in **Réseau Mondial** in the latter years. A brief historical note on the **Réseau Mondial** is included. *Subject Headings:* 1. **Climatic data** 2. **Réseau Mondial** 3. **Hamburg, Germany.**—*M.R.*

6.2–296 551.582.2(679)

*Mozambique. [Meteorological Service]. **Meteorological data, Mozambique.** [1953?] 49 p. mimeographed forms, entirely tables. Data through 1952. **DWB**—Data for 105 stations in Mozambique for periods up to 43 years. Average temperature, relative humidity and rainfall for entire period of record, and data for 1952 are given in tabular form for each month and the year—1 page for each station, no comments or text. Pressure, wind speed and sunshine data are given for Lourenço Marques and a dozen other stations. *Subject Headings:* 1. **Climatic data** 2. **Mozambique.**—*M.R.*

6.2–297 551.582.2(469)

*Pereira, Albert Barata (*Portugal, Nat. Met. Serv.*), **Algumas notas para o estudo do clima de Coimbra.** [Some notes for a study of the climate of Coimbra.] *Coimbra. Universidade. Museu e Laboratorio Mineralógico e Geológico, Publicações: Memorias e Noticias*, No. 34:54–66, **1953.** 5 figs., table. In Portuguese; English summary p. 65–66. **DWB**—An analytical study of means and frequencies of meteorological elements at Coimbra, Portugal. Data for 1952 (pressure, temperature, relative humidity, cloudiness, wind direction and speed and rainfall) are presented in tables and graphs and compared with normals based on 87 years of record obtained at the Geophysical Institute at Coimbra University. *Subject Headings:* 1. **Climatic data** 2. **Climatic studies** 3. **Climate of Coimbra** 4. **Coimbra, Portugal.**—*M.R.*

CLIMATIC CHANGES

See also: **Climatic forecasting by aerological data** (Matsukura), 6.2-76; **CO_2 and climate** (Buch), 6.2–93.

6.2–298 551.583.3:582

Gams, H., **Neue Beiträge zur Vegetations- und Klimageschichte der nord- und mitteleuropäischen Interglaziale.** [New contributions to the plant and climatic history of the north and central European interglacials.] *Experientia*, 10:9:357–363, Sept. 15, **1954.** 7 figs., 2 tables, refs. English summary p. 363. **DWB**—A critical study of recent research into pollen diagrams, with a detailed correlation table of Quaternary. Many families and species of plants vanished at end of Pliocene. Climate from first glaciation to Iowan was less cold than in Wurm [Wisconsin], the less extensive glaciation of which was due to the dryness of its continental climate. A short independent glaciation (Pre-Wurm) is recognized preceding the Wurm. *Subject Headings:* 1. **Pollen analysis** 2. **Quaternary climates.**—*C.E.P.B.*

6.2–299 551.583.3:061.3

Gross, H., **IV. Kongress der Internat. Quartärvereinigung (INQUA) in Rom und Pisa 1953.** [IV Congress of the International Quaternary Union in Rome and Pisa, 1953.] *Erdkunde*, 8:1:71–74, Feb. **1954. DLC**—At this Congress of over 300 members from all parts of the world more than 150 communications were read, a few of which are briefly summarized. These include C. Troll on the climate of the Quaternary snow line, J. Büdel on the pluvial periods of tropical Africa, R. F. Flint and others on radio-carbon dating, results of pollen analysis, etc. *Subject Headings:* 1. **Quaternary climates** 2. **Congresses.**—*C.E.P.B.*

6.2–300 551.583.3:529:539.16:546.26

Kulp, J. Laurence (*Lamont Geol. Obs.*), **Climatic changes and radioisotope dating.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 201–208. 3 tables, 8 refs.). **DLC**—The methods for dating significant climatic changes are classified according to the time interval over which they are applicable. These are (1) from 3,000,000,000 to 10,000,000 B.P. years involving the uranium lead and uranium helium methods; (2) from 10,000,000 to 30,000 B.P. using the helium method with the aid of high-sensitivity mass-spectrometric techniques and ionium content for deep sea sediments and (3) from 30,000 years B.P. to present utilizing the carbon 14 method. Some results of climatic dating obtained by the C^{14} method are described. These include application of C^{14} to samples from Bermuda stratigraphy in order to date the end of the Wisconsin glaciation; the deep sea cores in order to determine date of warm water and cold water deposition and to determine the rate and direction of movement of deep ocean water. *Subject Headings:* **1. Climatic changes 2. Radiocarbon dating.**—*I.L.D.*

6.2–301 551.583.3:525.3

van Woerkom, J. J. (*Yale Univ.*), **The astronomical theory of climate changes.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 147–157. 4 figs., 5 tables, 9 refs.) **DLC**—M. Milankovitch's theory that the periods of glaciation are ascribable to astronomical causes is based upon a procedure involving the division of the year into two equal halves in such a way that the heat received during any day of the summer half exceeds that of any day of the winter half and upon quantitative analysis of the influence of the obliquity. The author gives recalculated values of the reciprocals of planetary masses, of the coefficients and periods of terms in the expression for the eccentricity and perihelion of the earth's orbit and of coefficients and periods of terms in the expressions for the inclination and longitude of the ascending node of the earth's orbit referred to the ecliptic of 1950.0; time of coincidence of perihelion with summer and winter solstices and values of eccentricity (time in units of 1000 years before 1950) changes in insolation for a change of 1° in the obliquity are given in tables. The factors determining the astronomical climate are analyzed and the author concludes that "the changes in insolation caused by the changes in the earth's orbit and its axis of rotation are insufficient to explain the periods of glaciation." *Subject Headings:* **1. Climatic changes 2. Solar influences.**—*I.L.D.*

6.2–302 551.583.3(234.3:45)

Venzo, S. (*Civic Museum of Natural History, Milan*), **Geomorphologische Aufnahme des Pleistozäns (Villafranchian-Würm) im Bergamasker Gebiet und in der Östlichen Brianza: Stratigraphie, Paläontologie und Klima).** [Geomorphological survey of the Pleistocene in the Bergamasque region and in Eastern Brianza; stratigraphy, paleontology and climate.] *Geologische Rundschau*, Stuttgart, 40(1):109–125, **1952.** 10 figs., 17 refs. **DLC**—The climatic succession of the Italian Alps shows, from pre-glacial upwards: Three cold Donau stadia with conifers and two mild interstadia; Warm-temperate Donau-Gunz interglacial; Gunz, three cold stadia and two warm-temperate forest interstadia; Temperate Gunz-Mindel interglacial with oak forest; Two Mindel stadia with a cool-temperate interstadial; Two Riss stadia; Tripartition of Wurm, the first interstadium (Mousterian) having a severe climate with loess formation. *Subject Headings:* **1. Quaternary climates 2. Italian Alps.**—*C.E.P.B.*

6.2–303 551.583.3:551.521

†Wexler, H. (*U. S. W. B., Wash., D. C.*), **Radiation balance of the earth as a factor in climatic change.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 73–105. 14 figs., 39 refs.) **DLC**—Proceeding from the point of view that changes in the "quantity and quality of solar radiation and variations in composition and albedo of the earth's atmosphere" could modify world climate, the author summarizes the following relevant topics: energy balance of the earth and its atmosphere, variations in amount and kind of solar radiation including changes in the solar constant and ultraviolet radiation, the relationship between sunspot maxima and minima and pressure, temperature and precipitation patterns; changes in the composition of the earth's atmosphere and their effect upon transmission of radiation, changes in albedo of the earth and its atmosphere and in

atmospheric turbidity, resulting from volcanic activity, and possible role of these changes in producing climatic variations. *Subject Headings:* **1. Climatic variations 2. Radiation balance.** —*I.L.D.*

6.2–304 551.583.3

Willett, Hurd C. (*M.I.T.*), **Atmospheric and oceanic circulation as factors in glacial-interglacial changes of climate.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 51–71. 30 refs.) **DLC**—Owing to the similarity of patterns between the great Pleistocene climatic cycles as revealed by geological evidence and the smaller post-glacial and current cycles, the author considers the essential characteristics of the Pleistocene glacial-interglacial cycles of climate and atmospheric circulation, "the essential features of the post-glacial historical and observational cycles of climate and atmospheric circulation and possible explanations of climatic cycles." Under the latter category, the author considers the explanation of a Pleistocene glacial-interglacial cycle based upon continental and volcanic factors, upon geometrical variations of the distribution of insolational heating over the surface of the earth and upon variable solar activity. The responses of the general circulation pattern as explained by the distribution of atmospheric pressure at sea level to sunspot number and to solar corpuscular emissions are summarized. The response of the circulation in the lower troposphere to sudden solar disturbance as indicated in the high altitude atmospheric soundings reported by SCHERHAG is given. *Subject Headings:* **1. Climatic changes 2. Climatic cycles 3. Atmospheric circulation 4. Solar activity 5. Glacial periods.**—*I.L.D.*

6.2–305 551.583.3 (931)

Willett, R. W. (*Geol. Surv., New Zealand. Dept. of Sci. and Ind. Res.*), **New Zealand pleistocene snow line, climatic conditions and suggested biological effects.** *New Zealand Journal of Science and Technology, Sec. B,* 32(1):18–48, July **1950.** 9 figs., tables, refs. p. 47–48. **DLC**—After quoting previous estimates of lowering of relative Pleistocene snow line as about 3000 ft, author constructs a chart of Pleistocene regional snow line of New Zealand based on a temperature fall of 6°F and a gradient of 6°F/1000 m. Nearly all South Island was glaciated or in periglacial zone; effects on vegetation are discussed. A map shows extent of ice, steppe loess (E. coast of S. Island), tundra and forest zones, and midsummer 10°C isotherm. The effects are illustrated by changes in distribution of beech and a snail (*Paryphanta*). In North Island there was only minor glaciation in the south. *Subject Headings:* **1. Quaternary climates 2. New Zealand.**—*C.E.P.B.*

MICROCLIMATOLOGY

See also: **Summary of observation** (Johns Hopkins Univ.), 6.2–46; **Microclimate . . .** (De Backer), **6.2–317**; **Heat balance measurement** (Lange), 6.2–318.

6.2–306 551.584:551.506:551.524

*Benedek, Éva, **Mikroklíma-vizsgálatok kenderállományban.** [Microclimatic investigations in a hemp field.] *Időjárás,* 58(3):158–168, May/June **1954.** 6 figs., tables. Russian and French summaries p. 158. **MH-BH**—In July 1952 an investigation was conducted for several days in a field of blooming hemp near Mezőhegyes for the purpose of determining the march of air and soil temperature. Air temperature variations in the field were found to have a considerably wider range and soil temperatures to be much lower but to vary within a narrower range than those either in a wood or in the open surface layer of the atmosphere. *Subject Heading:* **1. Micrometeorological temperature data 2. Hemp fields 3. Mezőhegyes, Hungary.** —*Trans. of author's abstract.*

6.2–307 551.584:631.58

Lawrence, E. N., **Microclimatology and hydroponics.** *Weather,* 9(5):147–152, May **1954.** 2 figs., 2 refs. **DWB**—Description of plant cultivation in water, sand or gravel without soil. Effects of climatic conditions on moisture and nutrient requirements are summarized. *Subject Heading:* **1. Hydroponic cultivation.**—*C.E.P.B.*

6.2–308 551.584:551.311.12

Wallén, C. C. (*Stockholm Univ.*), **Influences affecting glacier extension in northern Sweden.** *I.U.G.G. International Association of Scientific Hydrology, Brussels*, **1951,** *Transactions*, 1:145–153. 5 figs., 4 tables, 11 refs. **DWB**—Detailed study of ablation, made on the Kårsa glacier. An empirical formula for the transfer of heat from the air to the snow surface is derived. Percentage of ablation on snow and ice due to evaporation, radiation, convection and condensation is computed and compared with measurements in other places. Ablation values reduced to the period 1930–39 are derived. Macroclimatological causes of the retreat of glacier are discussed on the basis of increased summer temperatures and changes in the general circulation, which shows a stronger meridional type of flow pattern. *Subject Headings:* **1. Glacial ablation 2. Macroclimatic influences 3. Sweden.**—*A.A.*

BIOCLIMATOLOGY

6.2–309 551.586:06

World Meteorological Organization. Commission for Climatology, Wash., D. C., March 12–25, 1953, **Abridged final report of the First Session.** *World Meteorological Organization, WMO*, No. 14, RP. 6, **1953.** 90 p. Price: Sw.fr. 3. **DWB**—Contains list of those who attended, the final agenda, list of documents presented at session, transactions of each session, resolutions and recommendations adopted by the Commission, and Draft Provisional Technical Regulations. *Subject Heading:* **1. WMO. Reports.**—*M.R.*

6.2–310 551.586:541.182:535.36

Neuwirth, R. and Hummel, K., **Wettereinflüsse auf das Lichtstreuvermögen von kolloidalen Lösungen (Polyvinylpyrrolidon).** [Weather influences on the ability of colloid solutions (polyvinylpyrrolidon) to scatter light.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(3/4):388–402, **1954.** 4 figs., 24 refs. German, English and French summaries p. 388–389. **DLC**—Experiments with a 10% solution of this colloid (related to albumen) are described. Peaks of light scattering coincided with passage of cold fronts, with horizontal shearing and with jet stream overhead (wind maxima at 500 and 225 mb); agreements are significant. Relations were also found with geomagnetic disturbance and solar radiations. The effect may be due to short wave fields acting on macromolecules. *Subject Headings:* **1. Bioclimatology 2. Light dispersion 3. Colloids.**—*C.E.P.B.*

6.2–311 551.586:551.481.2

Sauberer, F., **Die Rolle der Bioklimatologie bei der Erforschung unserer Fliessgewässer.** [The role of bioclimatology in the investigations of our streams.] *Wetter und Leben, Sonderheft*, Vienna, No. 2:48–51, Sept. **1953. MH-BH**—Air pressure, wind, evaporation, radiative balance, temperature variations, precipitation and other meteorological factors affect the physical environment of biological forms inhabiting streams. General remarks contained in this paper elaborate on this theme. *Subject Headings:* **1. Stream bioclimatology 2. Limnological research.**—*M.R.*

6.2–312 551.586:572

Londoño, Julio, **El influjo del clima en la vida guajira.** [Influence of climate on life in Guajira.] *Sociedad Geográfica de Colombia, Bogotá, Boletín*, 11(4):193–198, **1953. DWB**—In addition to the regular annual rhythm of alternating parching sunshine and torrential rain, the climate of the Colombian peninsula of Guajira is characterized by a seven-year cycle of aridity. Since the soil is either completely dried out or inundated during a major part of the year, the growing season is extremely short. The author describes the way of life and customs of the native Indian population, as determined by the paucity of food and adverse climatic conditions. *Subject Headings:* **1. Climate of Colombia 2. Human ecology 3. Guajira, Colombia.**—*G.T.*

6.2–313 551.586:574.9(661)

Kaiser, Ernst, **Ideen zu einer Biogeographie der Sahara.** [Ideas on a biogeography of the Sahara.] *Petermanns Geographische Mitteilungen*, 98(2):86–100, **1954.** 4 charts, 6

photos, tables, refs. **DLC**—An account of the characteristics of the desert, climatic provinces and distribution of various animals. Pts. 2–4 deal with ecology, genetic and sociological biogeography. *Subject Headings:* **1. Bioclimatology 2. Biogeography 3. Sahara Desert.**—*C.E.P.B.*

6.2–314 551.586:576.1:523.43

Shapley, Harlow (*Harvard Univ.*), **On climate and life.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 1–12. 6 refs.) **DLC**—The author discusses the probable distribution of life throughout the sidereal universe, the possible climatic characteristics of Mars, the possible existence of life on Mars and on other planets of the solar system besides the earth, the physical, chemical and astronomical conditions necessary for the existence of planetary life, the primitive biochemistries associated with the establishment of life on earth, and climatic change during the Pleistocene. In general this chapter is a preview of the succeeding papers. *Subject Headings:* **1. Climate and man 2. Climate of Mars.**—*I.L.D.*

6.2–315 551.586:633.1

†Michajlikov, Vladimir and Juárez, Guillermo A., **Tres años de experiencias de temple contra la sequía en trigo y en maiz.** [Three years' experience with a method for hardening wheat and maize against drought.] *Meteoros*, Buenos Aires, 3(1):54–80, Jan./March **1953.** 11 figs., 15 tables, bibliog. p. 80. Spanish and English summaries p. 54. **DWB**—The method (developed by HENKEL in Argentina) employed to harden wheat and maize against drought consists of treating the seeds with water sufficiently to initiate germination and then retarding the process by exposing the germinated seeds to dry atmospheric conditions with temperatures of about 25°C. Data on the results of experiments carried out for three years in Argentina are given and are analyzed statistically. It is shown that the hardening treatment results in an increase in yields depending upon the varieties used. *Subject Headings:* **1. Agricultural climatology 2. Drought resistant seeds 3. Argentina.**—*I.L.D.*

6.2–316 551.586:551.506.8

Morgen, A., **Zur Erfassung der witterungsbedingten Schwankungen bei der Pflanzenproduktion. Fünf Jahre Vegetationsüberwachung in Trier.** [On the variations in plant production caused by weather. Five years observations at Treves.] *Angewandte Meteorologie*, 2(2):48–58, May **1954.** 4 figs., 5 tables, 18 refs. **MH-BH**—Owing to multiplicity of growth factors it is not possible to estimate clearly their effect on plant development, but this can be attained by objective measurements on selected test plants, of which *Prunus malus* is the most suitable. The development of individual organs reflects the development of the whole plant, the more so if the environmental influence is standard. The growth of various plants is compared with the daily course of the meteorological elements over five summers and the peculiarities are analyzed. *Subject Headings:* **1. Phenology 2. Bioclimatology.**—*C.E.P.B.*

6.2–317 551.586:551.584

De Backer, S. M., (*Belgian R. Met. Inst., Uccle*), **Le microclimat et la biologie.** [Microclimate and biology.] *Scientia*, Milan, 84(443/444):51–54, March/April **1949. DLC**—Microclimate, although it largely depends on the general climate, nevertheless differs from it in respect to the objectives of investigation, the methods applied and, above all, the instruments used. Microclimate is closely linked to animal and vegetable life; microclimatology is therefore of major interest from the point of view of biology and agriculture. *Subject Headings:* **1. Microclimatology 2. Bioclimatology.**—*Trans. of author's abstract.*

6.2–318 551.586:551.584.43:551.525.2:582.29

Lange, Otto Ludwig, **Einige Messungen zum Wärmehaushalt poikilohydrer Flechten und Moose.** [Some measurements of the heat balance of poikilohydric lichens and mosses.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(2):182–190, **1954.** 5 figs., 3 refs. German, English and French summaries p. 182–183. **DLC**—Warming of lichens by radiation is an important factor in their distribution. They respond very rapidly to solar

radiation, reaching temperatures of 60°C or more depending on nature of surface on which they grow, aspect, and height above surface. They may be warmer than underlying surface. Color is important, black lichens and mosses becoming up to 9°C warmer than white. *Subject Heading:* **1. Lichen temperatures.**—*C.E.P.B.*

6.2–319 551.586:551.594

Schuà, Leopold F., **Wirken luftelektrische Felder auf Lebewesen? Goldhamster weichen Gewitterfeldern aus.** [Do atmospheric electric fields affect ways of life? Golden hamster shows thunder fields.] *Umschau*, 54(15):468–469, Aug. 1, **1954.** 7 figs. **DWB**—The gold hamster (a small mammal) only moves its nest when disturbed. A variable electric field was applied through the nest, and most of the animals moved to a site away from the field. *Subject Headings:* **1. Bioclimatic research 2. Atmospheric electricity effects.**—*C.E.P.B.*

UPPER AIR CLIMATOLOGY

See also: **WMO Conferences** (WMO), 6.2–13; **Solar radiation** (Kaemfert), 6.2–158; **Lowering of freezing level . . .** (Ross), 6.2–250; **Hydrology of range lands . . .** (Veihmeyer), 6.2–277.

6.2–320 551.587:551.553.21(54):551.43

Krishna, Rao, D.: (*Met. Off., Bombay*), **A note on the comparative study of the radiosonde ascents over Bombay and Poona during the monsoon season of 1950.** *Indian Journal of Meteorology and Geophysics*, 3(4):300–302, Oct. **1952.** 2 tables, 3 refs. **DWB**—Short study on changes in the southwest monsoon air mass, crossing the mountain ridges of the Western Ghats (height up to 5000 ft). Table of average values for dry and potential wet bulb temperature, humidity, mixing ratio and relative humidity given for Bombay and Poona (pressure levels 900 to 600 mb, scanty data up to 300 mb). *Subject Headings:* **1. Indian Monsoon 2. Aerology 3. Orographic effects 4. Western Ghats, India.**—*A.A.*

ENVIRONMENTAL INFLUENCES

See also: **Study of sunlight forests** (Harada), 6.2–166; **Influence of sea and land distribution on temp.** (Rubinshtein), 6.2–175.

6.2–321 551.588.1

Vageler, Paulo, **Contribução para o problema da sêca.** [Contribution to the problem of drought.] *Revista Brasiliera de Geografia*, Rio de Janeiro, 15(1):156–161, Jan./March **1953.** table. **DWB**—On basis of his agrogeological and ecological studies conducted in four continents over a period of more than 50 years, the author discusses the principal causes of the formation of arid land, e.g., 1) erosion at the source of rivers causing floods and clogging up irrigation installations, 2) water losses from bare land through runoff in the upper and evaporation in the lower river basin, 3) alkalization and salt deposits in irrigation systems and irrigated land and 4) loss of useful land and water through widening and flattening of canals. Examples of such development in various dry areas are quoted and best methods of preventing it indicated with particular reference to conditions in northeastern Brazil. Historic water supply installations are mentioned. *Subject Headings:* **1. Aridity 2. Drought.**—*G.T.*

MISCELLANEOUS

SOLAR INFLUENCES

See also: **Structure of non-linear scale** (Eickermann), 6.2–27; **Ionospheric wind analysis** (Manning, others), 6.2–227.

6.2–322 551.590.2

*Leiri, F., **Väderleksgid jämte förslag till en my indelning av tiden, 1948, 1949.** [Weather guide with a proposal for a new calender, 1947, 1948.] Helsingfors, Bocktryckeri A/B Sana,

1947, 1948. 2 pieces, 39+42 p. tables. **DLC**—An attempt to apply and test a new theory on planetary and cosmic influences on the weather as advanced by the author in **Neue Gesichtspunkte für Wetterkunde.** The weather guides give brief monthly "time tables for cosmic radiation" that show when to expect weather decline, based solely on solar and sunspot activities. The weather of 1946 and 1947 in Helsinki showed good agreement with the weather guides and it is suggested that a study of the guides in a sequence of years may give the explanation to the eleven-year periodicities of weather. *Subject Headings:* **1. Cosmic influences 2. Planetary influences 3. Solar activity.**—*W.N.*

6.2–323 551.590.21:523.74

Nordø, Jack, **Solaktiviteten og dens innflytelse på atmosfaeren.** [Solar activity and its influence upon the atmosphere.] *Naturen*, Bergen, 78(6):175–192, **1954.** 10 figs. **DWB**—Various theories on the formation and activities of sunspots, particularly in relation to radio communication and weather, are reviewed. Solar flares are explained as hydrogen explosions giving rise to considerable ultraviolet radiation. No significant influence of flares on air pressure was found (during the 17-year period) in Norway, but a weak increase in summer and decrease in winter was noticed in Oslo during the eruptions. *Subject Headings:* **1. Solar influences 2. Sunspots 3. Solar flares.**—*W.N.*

6.2–324 551.590.21:523.74

Notuki, Masao (*Tokyo Astron. Observ., Mitaka*), **Solar activity and terrestrial disturbance.** *Japan. Science Council. Ionosphere Research Committee, Report of Ionosphere Research in Japan*, 6(4):216, Dec. **1952. DWB.** *Subject Headings:* **1. Solar activity 2. Solar influences.**

OPTICAL PHENOMENA

See also: **Mie particles** (Penndorf), 6.2–243.

6.2–325 551.593.12:551.551

Keller, Geoffrey, **Astronomical "seeing" and its relation to atmospheric turbulence.** Ohio. State Univ. Research Foundation, Contract AF 19(604) 41, Scientific Report, No. 1, Dec. **1952.** 36 p. 7 figs., 7 refs., 93 eqs. **DWB**—A method is outlined by which it is, in principle, possible to compute the average autocorrelation function of density fluctuations in the earth's atmosphere, assuming that the distribution of light intensity in the "seeing" image of a star is known. The presentation is in two parts, the first being devoted to a qualitative description of the events which occur and a statement of the formulas required for making computations. The second part contains the mathematical theory. *Subject Headings:* **1. Atmospheric turbulence 2. Scintillation. I. Ohio. State Univ. Research Foundation II. Contract AF 19(604) 41.**—*Author's abstract.*

6.2–326 551.593

Lunar rainbow and arc. Seychelles Islands. *Marine Observer*, 24(163):13, Jan. **1954.** fig. **MH-BH**—A lunar rainbow showed clear colors. Also a white arc near but not centered on moon, origin obscure. *Subject Heading:* **1. Optical phenomena.**—*C.E.P.B.*

6.2–327 551.593.1:551.594.7

Grant, Arthur S. G. (*Met. Service of Canada, Ottawa*), **Notes on the atmospheric refractive index in Canada from aircraft meteorological soundings.** *American Geophysical Union, Transactions*, 35(3):508–510, June **1954.** 3 figs., 4 refs. **MH-BH**—Calculations of the atmospheric refractive index for radio waves were made from aircraft soundings over a large area of northern Canada in connection with the 1952 season of the shoran survey. A comparison is made between the results and the NACA 60 pct relative humidity standard atmosphere. *Subject Headings:* **1. Refractive index 2. Atmospheric refraction 3. Radio waves 4. Northern Canada.**—*Author's abstract.*

6.2–328 551.593.1

Thom, A., **Some refraction measurements at low altitudes.** *Institute of Navigation, London, Journal*, 7(3):301–304, July **1954.** fig., table. **DWB**—Observations on setting sun

from 480 ft at Dunlop, W. Scotland, gave refractions from 40′ at solar altitude −20′ to 20′ at altitude +110′, varying with temperature. Horizontal refraction is calculated as 33′.5 at 30 in. and 50°F with correction of 8 sec of arc per °F. A. Fletcher comments that this is not inconsistent with the Garfinkel-Smiley values. *Subject Headings:* **1. Atmospheric refraction. I. Fletcher, A.**—*C.E.P.B.*

6.2–329 551.593.11

Abnormal refraction, off Cape Finisterre, New Zealand waters, [and] **Gulf of Aden.** *Marine Observer*, 24(165):141–142, July **1954.** figs. **MH-BH**—1. Sketches of curious distortions of a ship off C. Finisterre on Sept. 12, 1953. 2. Distortion of rising sun in Napier Harbour, Sept. 22, 1953. 3. Refraction of a ship and of land seen through a dust storm in Gulf of Aden. *Subject Headings:* **1. Refraction phenomena 2. Mirages.**—*C.E.P.B.*

6.2–330 551.593.11

Ozorai, Zoltán, **Légkröi tükröződések hullámgelüteken.** [Mirages on wave surfaces.] *Időjárás*, 58(3):143–153, May/June **1954.** 7 figs., 14 refs., 16 eqs. Russian and French summaries p. 143. **MH-BH**—Current theories explain the phenomenon of multiple mirages by anomalous density distribution; such theories, however, cannot account for more than three images. Without disregarding anomalous density distribution, the new interpretation proposed in this paper is based on the fact (well established by theory and experience) that stationary waves may form along strong inversion layers. It is demonstrated how series of straight and inverted pictures are produced by reflection from wave surfaces. *Subject Heading:* **1. Mirages.**—*Trans. of author's abstract.*

6.2–331 551.593.7:551.521.31:778

Wörner, H. (*Met. Obs., Potsdam, Germany*), **Eine Methode zur photographischen Registrierung der Himmelspolarisation.** [A method for photographic recording of sky polarization.] *Zeitschrift für Meteorologie*, 8(5):142–150, May **1954.** 4 figs., 2 tables, 7 refs. **MH-BH**—The principle of this apparatus is the measurement of polarization in different spectral regions. By means of this apparatus it is possible to determine every thirty seconds both the position of the principal polarization plane and the polarization magnitude of the sky at the given point in the sky. The theoretical principles of the apparatus are discussed and its construction is described with the aid of diagrams and photographs. Also examples of its use are given. Its precision at a moderate degree of sky polarization is ±4%. *Subject Headings:* **1. Polarization measuring equipment 2. Sky light polarization 3. Photographic measurements.**—*I.L.D.*

ELECTRICAL PHENOMENA

See also: **Cloud physics** (Bricard), 6.2–1; **Radio echoes during aurora** (McNamara, Currie), 6.2–39; **Measurements of atmosph. disturbance** (Wittmann), 6.2–85; **Fluctuation of ultrasonic waves** (Krasil'nikov), 6.2–202; **Radioactive hailstones** (Jaffe, others), 6.2–276; **Atmosph. electric fields** (Schuâ), 6.2–319; **Atmospheric refraction** (Grant), 6.2–327.

6.2–332 551.594.12:551.510.535:551.594.5

Omholt, A., **Electron density in the E-layer during auroral displays deduced from measurements of absolute brightness of the auroral luminosity.** *Journal of Atmospheric and Terrestrial Physics*, 5(4):243–244, Sept. **1954.** table, 2 refs., 3 eqs. **DWB**—Photoelectric observations of brightness of aurora on 4278 Å at Tromsø are tabulated and photon emission and electron density calculated. Electron density seldom exceeds 10^7 electrons per cc. *Subject Headings:* **1. Auroras 2. Electron density 3. E layer.**—*C.E.P.B.*

6.2–333 551.594.12:551.510.535

Piggott, W. R., **On the interpretation of the apparent ionization distribution in the ionosphere.** *Journal of Atmospheric and Terrestrial Physics*, 5(4):201–210, Sept. **1954.** 5 figs., table, 14 refs., 12 eqs. **DWB**—Limitations and experimental difficulties in analyzing ionization distribution with height are examined. Examples of models considered are: simple parabolic

distribution of density, constant density slab between E and F, three-layer model, almost linear F model and effect of sporadic E. *Subject Headings:* **1. Ionization 2. Ionosphere.**—*C.E.P.B.*

6.2–334 551.594.221

Norinder, Harald, **The effect of geological inequalities on the path of lightning.** (In: **Thunderstorm electricity,** Chicago, University, Dept. of Meteorology, Oct. **1950.** p. 207–215. 5 figs.) **DWB**—An experimental laboratory arrangement for testing the hypothesis that the deposits in soil attract lightning is described and illustrated with diagrams. It was observed that on a homogeneous conducting surface it was not possible to predict where lightning will strike and that a nonhomogeneous conducting surface influenced strongly the path of a lightning discharge in the case of positive polarity and "lightning nests" developed in the sand layer, but did not influence negative discharges. *Subject Headings:* **1. Lightning attraction 2. Lightning conduction 3. Lightning discharge path 4. Electrical conductivity of soil.**—*I.L.D.*

6.2–335 551.594.221:537.523

Norinder, Harald and Salka, Oskars, **Mechanism of long-gap negative spark discharges in air at atmospheric pressure.** *Arkiv för Fysik,* 5(5/6):493–529, **1952.** 26 figs., 3 tables, 8 refs. **DLC**—Whereas the first paper (*see item* 6.2–334 above) reported on positive polarity, the present paper is devoted to experiments with negative polarity; methods and procedures being the same as used earlier. Several hundred photos were taken of the discharge, some of which are presented, in an attempt to calculate the field by (1) an exact method in which the space charge was not considered and (2) another method by an approximation, values of which conformed with the concept generally valid for crown edges. Presumably the field at the electrode surface has but little direct influence on the corona-onset. Results in tables and curves. *Subject Heading:* **1. Disruptive discharges.**—*W.N.*

6.2–336 551.594.221

Schonland, B. F. J., **The pilot streamer in lightning and the long spark.** *Royal Society of London, Proceedings, Ser. A,* 220(1140):25–38, Oct. 22, **1953.** fig., table, 29 refs. **DLC**—The breakdown of the air in front of the first leader streamer from a thundercloud to earth begins with a weakly ionized pilot streamer advancing at $1.5–8\times10^7$ cm/s in steps of 10–80 m, each step followed by the highly ionized leader. The absence of significant pulsations on records of the electrostatic field of the stepped leader shows that the pilot streamer must carry about the same current (320 A) and charge per unit length as the leader. The same two stages occur in a very long spark from a negative point. An explanation of this step progress is advanced. *Subject Heading:* **1. Lightning structure.**—*C.E.P.B.*

6.2–337 551.594.221:535.33

Vassy, Arlette, **Comparaison des spectres d'étincelles de grande longueur dans l'air et du spectre de l'éclair.** [Comparison of the spectra of long sparks in the air with the lightning spectra.] *Académie des Sciences, Paris, Comptes Rendus,* 238(18):1831–1833, May 3, **1954.** 12 refs. **DLC**—A comparison of the spectra of three phases of lightning discharges (pre-discharge, principal discharge, afterglow) shows that the afterglow intensity increases with increasing disruption distance, while the pre-discharge and principal discharge have a maximum at a given point. In applying this information to lightning the conclusion is reached that lightning spectra are chiefly afterglow spectra. *Subject Heading:* **1. Lightning spectra.**—*Trans. of author's abstract.*

6.2–338 551.594.5:551.594.6

Aspinall, A. and Hawkins, G. S., **Radio echo reflections from the aurora borealis.** *British Astronomical Association, Journal,* 60(5):130–135, April **1950.** figs., plate, tables, 12 refs. **DLC**—This paper describes some studies of the Aurora Borealis using contemporary radio techniques such as are employed in the investigation of meteors. A number of aurora formations occurring during 1949 have been identified by the characteristic echoes which they produce on 72 Mc/s., and continuous observations on this frequency have disclosed periods of auroral activity. Auroral rays were found to have an electron density of 6×10^5 electrons/cc

and height measurements confirm that these rays occur from 100 to 300 kms above the earth's surface. Apparent radial velocities have been observed which are interpreted as random movements in the aurora. *Subject Heading:* **1. Radio echoes from auroras.** —*Authors' abstract.*

6.2–339 551.594.5:551.594.7

Bullough, K. and Kaiser, T. R., **Radio reflections from aurorae.** *Journal of Atmospheric and Terrestrial Physics*, 5(4):189–200, Sept. **1954.** 9 figs., 3 tables, 16 refs. **DWB**—Observations at Jodrell Bank with a rotating aerial system on 4.1 m included 3 occasions of auroral echo. Echo is interpreted as a reflection from the most highly ionized part of an auroral arc extending more than 1000 km along geomagnetic latitude 59°. The reflecting region was only a few km across, at a height below 125 km, moving westward at 1 2 km/sec. The movement is attributed to movement of the ionizing agent. *Subject Heading:* **1. Radio echoes from auroras.**—*C.E.P.B.*

6.2–340 551.594.51

Agy, Vaughn (*Nat. Bureau of Standards, Washington, D. C.*), **The location of the auroral absorption zone.** *Journal of Geophysical Research*, 59(2):267–272, June **1954.** 7 figs., 2 refs. **MH-BH**—A study of data from a chain of radio-wave field-strength recording stations along the 90th meridian suggests that the "auroral absorption zone" coincided with the zone of maximum frequency of occurrence of visible aurora. North of this, there appears to lie a region in which absorption is extremely low. Although the accuracy of location of the absorption zone is limited by use of fixed transmitters and receivers, as well as by the fact that varying modes of propagation are not taken into account, the indications are that it is somewhat farther north and narrower than has been suggested previously. *Subject Headings:* **1. Auroral absorption zone 2. Auroral spectra.**—*Author's abstract.*

PART II. ANNOTATED BIBLIOGRAPHY ON TEXTBOOKS AND MONOGRAPHS CONTAINING SUBJECT BIBLIOGRAPHIES

By: *Malcolm Rigby and Mary L. Rice*

Anyone wishing to make an *exhaustive* search of the current or past literature on a given subject in Meteorology should consult the systematically arranged bibliographies which were reviewed in the January 1955 issue of **Meteorological Abstracts and Bibliography.** The most important of these, not counting **Meteorological Abstracts,** are:

1. **Royal Meteorological Society, Bibliography of Meteorology,** 1920–48
2. **Bibliographie Météorologique Internationale,** 1921–52
3. **International Catalog of Scientific Literature, F. Meteorology,** 1900–14
4. **Physics Abstracts,** 1900–55

Over a hundred other more general or more specialized sources are listed in the above mentioned special Bibliography of Bibliographies on Meteorology.

The researcher wishing to find material of a more *specialized* nature can frequently get a good start toward a compilation of the best literature on any one of a thousand subjects of interest to meteorologists, by consulting lists of references at the end of textbooks, monographs or even articles in periodicals or serials, as well as by consulting the more systematically arranged subject catalogs or indexes which we have noted in the outline in the January 1955 Bibliography of Bibliographies.

It would be impossible even to begin to *list* all of the meteorological works containing good subject bibliographies, let alone to attempt to annotate all of these sources. However, we have listed in this issue about 200 which were not mentioned in the 6A bibliography, and in the following systematic and alphabetical subject outlines we have tried to give two approaches to location of material—(A) on a given *subject area*, and (B) on a given *specific topic*, whether or not the item was abstracted in this bibliography.

The key to the location of abstracts *not* contained in this 6B bibliography is as follows: for instance, if the item is numbered 4.2–165, the first place indicates volume 4 (1953); the second place, if a number, indicates Part I of issue 2 (February) of 1953; the group of figures following the— is the item number within Part I of that issue.

If the second place is occupied by a letter (e.g., 2*K*–102) the issue will be that corresponding to the alphabetical order of that letter. 2K = Vol. 2, No. 11 (November 1951), and item 102 will be found in Part II of that issue.

An exception is in the case of the first vol. (1950) in which the first place indicates the number of the *issue* rather than the *vol.* For instance, 6–102 represents No. 6 (June 1950), item 102 in Part I, and C–55 indicates No. 3 (March 1950), item 55 in Part II.

Back issues of **Meteorological Abstracts and Bibliography** can be obtained from the Office of Exec. Sec'y. of the American Meteorological Society at 3 Joy Street, Boston 8, Mass., as indicated on the back of the cover of this issue. Bound volumes of **Meteorological Abstracts and Bibliography** are to be found in many libraries.

No one should assume that the following bibliography or even the outline will contain all of the best sources of specialized bibliographies in meteorology, although we have tried to make it as comprehensive as possible.

It may be noted that most of the abstracts consist merely of a brief reference to the portion of the work which is of bibliographic interest, whereas a number give more extensive information on the work itself. The latter group are mostly works which have not previously been run in **Meteorological Abstracts and Bibliography** and hence must be considered as material for Current Abstracts as well as for this Special Bibliography. Although this detracts from the homogeneity of the Bibliography, it is the most economical method of publishing the largest number of items with the least duplication.

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1856

6B–1 551.5:551.46.016

Great Britain. [Meteorological Office], [**Meteorological papers of the Board of Trade 1856–1859**]. Pub. **1856–1859.** Ten papers issued by or reprinted by the Board of Trade, bound in one volume, with binder's title as above. **DLC**—The annual reports of the Meteorological Department of the Board of Trade for 1857, 1858 and 1859, and the Barometer Manual dated 1859, all signed by Rear Admiral Robt. Fitzroy, constitute one of the first manuals of Marine meteorology (Maury's **Physical geography of the sea** was more systematic). The reports not only give instructions for ship's observers in reporting, and for navigators in using compiled or observed meteorological information, but give a considerable amount of history of the Admiralty Weather Service and the role of the Royal Society in promoting marine meteorology observing networks and forecast research. *Subject Headings:* **1. Marine meteorology 2. Manuals.**—*M.R.*

1865

6B–2 91:016

†Vsesoiuznoe Geograficheskoe Obshchestvo, Leningrad, **Izvestiia,** v. 1, **1865–** Latest issue seen, 86(4), July/Aug. **1954.** 6 nos. a year. editors, E. N. Pavlovskiĭ and S. V. Kalesnik. Printed by Izdatel'stvo Akademii Nauk SSSR, Demidov Per., 8-a, Leningrad. Price: 9 rubles per issue. Regular feature in most issues: **Bibliografii.** Divided into 2 sections, one a list of geographical literature published in Russia, received in the Library of the All Union Geographical Society; the other, foreign publications (monographs and journals) received in the library. **DLC**—These lists of native and foreign accessions which have been received in the library of the Society often contain 500 or 600 references to recent literature, arranged alphabetically within each section but not classified. (*Same item as* 1–24, Jan. 1950, *MAB.*) *Subject Headings:* **1. Geographical bibliographies 2. Geographical accession lists 3. Russian geographical literature 4. U.S.S.R.**—*M.R.*

1884

6B–3 551.58:016

†Ramsay, Alexander, **A bibliography, guide and index to climate.** London, Sonnenschein, **1884.** 449 p. At head of t-p: The Scientific Roll. **DLC**—Contains a general bibliography, arranged chronologically from 1485 to 1881 (46 pages), a subject index, and a special bibliography on water vapor with a similar index. A number of essays, notes and reviews are also included. *Subject Headings:* **1. Bibliography on climatology 2. Water vapor bibliographies.**—*M.R.*

1888

6B–4 551.5:016(987)

†Greely, Adolphus W., **Report on proceedings of the United States Expedition to Lady Franklin Bay, Grinnell Land.** Wash., D. C., Govt. Print. Off., **1888.** 2 v. Numerous photos, tables.

diagrams, maps (some fold.) At head of title: International Polar Expedition. **DWB**—An account of the United States Expedition to Lady Franklin Bay during the First International Polar Year, 1882–1883, with extensive tables of meteorological data. A bibliography entitled "Authorities on Arctic meteorology" is included in v. 2 (p. 455–474). The more than 400 references are alphabetically arranged by author under three sub-divisions: General Arctic, America, and Arctic Europe and Asia. (*Same item as* 5I–9, Sept. 1954, *MAB.*) *Subject Headings:* **1. Arctic bibliographies 2. Bibliography on Arctic meteorology.**—*M.L.R.*

1889

6B–5 551.5:92:016

†Ferrel, William, **Complete list of his publications.** *The Naturalist*, Kansas City, Kansas, 4(5):2–3, Dec. **1889.** Abstracted from separated sheets. **DWB**—A note on the life of this most eminent meteorologist (b. Jan. 29, 1817 in Bedford Co., Penna.), and a chronological list of over 50 of his contributions to meteorology, astronomy and oceanography published between 1853 and 1889. *Subject Headings:* **1. Author bibliographies 2. Biography 3. Bibliography of William Ferrel 4. Ferrel, William.**—*M.R.*

1908

6B–6 551.573:016

†Livingston, Grace J., **An annotated bibliography of evaporation.** *Monthly Weather Review*. 36:181–186; 301–306; 375–381, June, Sept., Nov. **1908** and 37:68–72; 103–109; 157–160; 193–199; 248–252, Feb., March, April, May, June **1909. DWB, DLC**—An excellent coverage of work on evaporation chronologically arranged from 1670 to 1909. Author has attempted to give a sufficiently full summary of each reference so that the original need not be consulted except for full information. Articles on evaporation for meteorologists, agriculturists, and irrigation and hydraulic engineers are included. (*Same item as* K–1, Nov. 1950, *MAB.*) *Subject Heading:* **1. Evaporation bibliographies.**—*H.P.K.*

1911

6B–7 551.5:92:016

†Voeĭkov, Aleksandr Ivanovich, **Trudy.** (Publications, 1865–1910.) (Printed by the *Akademiia Nauk*, **1911.**) 16 p. **DWB**—The articles and works of A. I. Voeĭkov (Woeikof) published between 1865 and 1910 in 60 different Russian, German, French, and English language periodicals and other sources, are listed chronologically under each separate serial, etc. About 400 titles in the fields of meteorology, climatology and geography are included. *Subject Headings:* **1. Author bibliographies 2. Bibliography of Aleksandr I. Voeĭkov 3. Voeĭkov, Aleksandr Ivanovich.**—*M.R.*

1915

6B–8 551.524.37:551.509.532:016

†Reed, William Gardner and Feldkamp, Cora L., **Selected bibliography of frost in the United States.** *Monthly Weather Review*, 43(10):512–517, Oct. **1915.** 94 refs. **DLC**—Annotated bibliography on frost, frost forecasting and frost prevention for the period 1896–1915 and an index of works, state by state. (*Same item as* 4C-77, March 1953, *MAB.*) *Subject Headings:* **1. Frost bibliographies 2. Bibliography on frost 3. United States.**—*N.T.Z.*

1917

6B–9 551.515.3(4):016

†Wegener, Alfred, **Wind- und Wasserhosen in Europa.** [Wind spouts and water spouts in Europe.] *Die Wissenschaft*, Brunswick, Vol. 60, **1917.** 301 p. 85 figs., tables, 258 refs., 8 eqs. **DLC**—Extensive, detailed, theoretical work. Eleven selected works on the subject are reviewed. List of 258 useful references to occurrences of funnel clouds is included. (*Same item as* E–29, May 1950, *MAB.*) *Subject Headings:* **1. Tornado dynamics 2. Tornado bibliographies.**—*H.P.K.*

1926

6B–10 551.557(471.1):016

†Kallio, N., **Über die Windverhältnisse der oberen Luftschichten am Aerologischen Observatorium Ilmala nebst Übersichten für andere Gegenden.** [On the wind conditions of the upper air layers at the Aerological Observatory of Ilmala, including surveys for other regions.] *Finska Vetenskaps-Societeten, Helsinki, Commentationes Physico-Mathematicae*, 3(3), **1926.** 149 p. 75+53 tables, 8 figs., bibliog. p. 131–149. **DLC**—Excellent analysis in the main confined to heights up to 3 km or 4 km. Comprehensive bibliography of upper wind observations and related literature on a world-wide basis includes more than 500 items. (*Same item as* 4E-26, May 1953, *MAB.*) *Subject Headings:* **1. Upper air wind bibliographies 2. Ilmala, Finland.**—*G.J.E.*

1929

6B–11 551.593.63(02):016

†Meyer, Rudolf Hans Wilhelm, **Die Haloerscheinungen.** [Halo phenomena.] Hamburg, Henri Grand, **1929.** 168 p. 22 figs., 2 tables, 249 refs. *Probleme der Kosmischen Physik*, v. 12. **DLC**—A most thorough treatise on all aspects of halos (in the atmosphere) and related meteorological phenomena. The optical, observational, climatological, physical and synoptic factors occupy separate chapters. Data on diurnal, seasonal, secular, regional and air mass variations in halo frequency are presented along with theory, and experimental research on form, orientation and size of ice crystals in clouds and their falling velocity. Artificial halos are also discussed. The many forms of halos occupy the third part of the text, and a very complete bibliography and index, Pt. 4. *Subject Headings:* **1. Halos 2. Optical phenomena 3. Halo bibliographies 4. Textbooks.**—*M.R.*

6B–12 614:551.510.42:019.941(05)

†U. S. Public Health Service, **Public Health Engineering Abstracts,** [v. 1], **1929–** Latest issue seen, 34(12), Dec. **1954.** Monthly. Annual Subject Index, Author Index, and List of Publications (serials). Earlier issues mimeographed, without volume numbers; format varied. **DLC**—Current issues vary each month in the subjects covered. Of special interest are sections on Atmospheric Pollution and Industrial Hygiene. Annual Subject Index headings of interest are: Atmospheric pollution, Housing, Industrial hygiene and Floods, with their numerous sub-headings. *Subject Headings:* **1. Abstracting periodicals 2. Public health abstracts 3. Atmospheric pollution bibliographies.**—*M.L.R.*

1931

6B–13 551.594.7:016

†Parkinson, T.; Kirby, S. S.; Arnold, P. N. and others, **Bibliography on radio wave phenomena and measurement of radio field intensity.** *Institute of Radio Engineers, Proceedings*, 19(6):1034–1084, June **1931.** **DLC**—The bibliography contains 630 annotated entries classified under subject and related subdivisions in chronological order: radiation, radio wave phenomena, fading, daily and seasonal variations, direction variations; meteorological, geophysical and cosmic effects; eclipses, reflection, refraction, diffraction, absorption, polarization, K-H layer, wave front angle, transmission formulas, atmospheric disturbances, strays, directional properties, etc. (*Same item as* 4K–86, Nov. 1953, *MAB.*) *Subject Heading:* **1. Radio wave propagation bibliographies.**—*W.N.*

6B–14 551.5:91.04(05):016

†Polar Record, Cambridge, Eng. v. 1, [No. 1] Jan. **1931–.** Latest issue recd. v. 7, No. 48, July 1954. Sub-title: **"A Journal of Arctic and Antarctic Research."** Issued by the Scott Polar Research Institute, Cambridge, Eng. Edited until 1945 by Dr. Frank Debenham and subsequently by an editorial committee. Pub. semiannually. Includes section "Recent Polar Literature" (called 1931–38 "Recent Polar Books"). **DLC**—Articles of historical, scientific or technical nature on exploration and research in both polar regions as well as notes on expeditions in the field and projected expeditions, correspondence, obituaries, bibliographies and reviews are included. Comprehensive and briefly annotated bibliographies have been a feature since 1939. (*Same item as* 5I–229, Sept. 1954, *MAB.*) *Subject Headings:* **1. Periodicals 2. Arctic expeditions 3. Arctic bibliographies.**—*M.L.R.*

6B–15 551.465(02):016

†Thorade, Hermann, **Probleme der Wasserwellen.** [Problems of water waves.] Hamburg, Henri Grand, **1931.** 219 p. *Probleme der Komischen Physik*, v. 13 and 14. 5 photos, 4 maps, 110 illus., bibliog. p. 195–211. **MWB**—Comprehensive review of theoretical studies of all types of ocean waves including a long list of literature covering the period from 1687 to 1930. (*Same item as* 5K–193, Nov. 1954, *MAB.*) *Subject Headings:* **1. Ocean wave bibliographies 2. Textbooks.**—*M.P.K.*

1932

6B–16 551.586:612:551.585.7

†Loewy, Adolf, **Physiologie des Höhenklimas; mit einem Beitrage: Das Hochgebirgsklima von Dr. Walter Mörikofer.** [Physiology of high (altitude) climates, with a chapter on high mountain climate by Walter Mörikofer.] Berlin, Julius Springer, **1932.** 414 p. tables, graphs, refs., bibliog. *Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tierre*, v. 26. **DWB**—This monograph presents a comprehensive summary of the knowledge on the physiological effect of high altitude climate upon human beings. It is divided into three parts, viz.: 1) a history of the investigations on the physiological effect of high altitude climate upon man, 2) high altitude climate (its definition, barometric pressure, atmospheric density, radiation conditions, temperature, precipitation, bioclimatic characteristics, etc.) and 3) the effect of high altitude climate upon the cir-

culatory system, respiration, metabolism, excretory system, nervous system, body temperature and heat regulation, acid-base balance, the skin, and upon individual organs; the effect of radiation upon the interior of the body; the action of drugs in high altitude climates; anthropological characteristics of residents at high altitude; resistance to rarified atmosphere, adaptation to altitude, mountain sickness, and the relationship between high altitude physiology and pathology. An extensive bibliography is included. *Subject Headings:* **1. Physiological climatology 2. Mountain meteorology 3. Medical climatology bibliographies. I. Mörikofer, Walter.**—*I.L.D.*

6B–17 53:016 551.5:016

Physical Society of London, **Reports on Progress in Physics,** (v. 1), **1934–.** Latest issue seen, v. 17, 1954. Annual (except 1942–1949). Editor, A. C. Stickland. Price: 2£ 10 sh (plus postage). Name index, v. 1–7, 1934–1941. Cumulative subject index, v. 1–10, 1934–1945, pub. 1953. **DLC**—Each volume of the Reports contains from 10 to 20 papers. Among those of particular interest to meteorologists: McCLELLAN, J. C., **Electrical phenomena at extremely low temperatures.** 1:198–227, **1934.** 42 refs.; APPLETON, E. V., **Radio exploration of upper-atmospheric ionization.** 2:29–165, **1936.** 102 refs.; CHAPMAN, S. and PRICE, W. C., **Upper atmosphere.** 3:42–65, **1937.** 51 refs.; BRUNT, D., **Meteorology,** 5:100–120, **1939.** 126 refs.; SWANN, W. F. G., **Cosmic rays.** 10:1–51, **1946.** 270 refs.; MEEK, J. M. and PERRY, F. R., **Lightning discharge.** 10:314–357, **1946.** 150 refs.; CHALMERS, J. ALAN, **Atmospheric electricity,** 17:101–134, **1954.** 85 refs. *Subject Headings:* **1. Progress in physics 2. Meteorology bibliographies.**—*M.L.R.*

1936

6B–18 551.515.21(26)5

†§Li, S., **Untersuchungen über Taifune.** [Investigations on typhoons.] *Berlin. Universität. Meteorologisches Institut, Veröffentlichungen,* 1(5), **1936.** 38 p. 16 figs., 8 tables, 66 refs. **DLC**—The origin, development, path, frequency (seasonal, year to year and regional), the structure, the "eye" and dynamics of typhoons in the Western Pacific are treated in this monograph, with examples from 4 cases in 1928 and 1934 analyzed and the typhoons of the year 1911 discussed. It is concluded that typhoons originate when cold Polar air from Australia moves over the warm tropical waters and picks up an enormous amount of moisture. This occurs at the season of greatest typhoon activity. Typhoon trajectories are determined by the general air flow and by pressure fields. The literature on typhoon dynamics is briefly surveyed. *Subject Headings:* **1. Typhoon dynamics 2. Typhoon origin 3. Typhoon frequencies 4. Typhoon bibliographies 5. Western Pacific.**—*M.R.*

6B–19 551.5:016 629.1:016

†U. S. Works Progress Administration, **Bibliography of Aeronautics, compiled from the Index of Aeronautics of the Institute of the Aeronautical Sciences, New York City.** N. Y., **1936–. DLC**—Two sections are of interest. Pt. 2, **Meteorology** (641 p.) with items arranged chronologically from 1937 to 1921 under such subject heads as Atmospheric Disturbances, Atmospheric Pressure, Circulation of the Atmosphere, Climatology, Clouds, Flight Weather Service, Fog, Forecasting, Humidity, Lightning, Observations, Oceanic Weather, Polar Weather, Precipitation, Radiation, Solar and Lunar Influences, Structure of the Atmosphere, Temperature, Tropical Weather, Visibility, Weather Maps, Wind, General. There is also an author index. **Supplement** to Pt. 2, July 1940. 98 p. Additional references arranged chronologically from 1940–1937, in similar subject groups. (*Same item as* A 4, Jan. 1950, *MAB.*) Pt. 21, Section 3, **Bibliography on ice formation.** 1937 (p. 34–43). Items are arranged chronologically from 1937 to 1921. They refer to all phases of the icing problem, including the meteorological, although most are concerned with the technical problems and de-icing techniques. **Supplement . . .** issued April 1941, p. 30–40. Also includes section on De-icing. Both sections arranged chronologically 1940–1937. (*Same item as* I–181, Sept. 1950, *MAB.*) *Subject Headings:* **1. Bibliography on aeronautics 2. Meteorology bibliographies 3. Ice formation bibliographies.** —*H.P.K.*

1937

6B–20 551.515.3:016

†Koschmieder, H., **Über Tornados und Tromben.** [On tornadoes and whirlwinds.] *Die Naturwissenschaften,* 25(41):663–664, **1937.** bibliog. (at end of article). **DLC**—Sixty-three references are divided under the headings: comprehensive or collective works: small whirlwinds; photographs, indistinctly and distinctly defined; photographs of tornadoes without any perceptible angle, with slight angle, and with definite heavy angle; tornadoes in Australia; tornadoes and tropical cyclones; rapid growth from under side of clouds; tornadoes and upper-air winds; whirlwinds and vertical temperature distribution; whirlwind and hail; almost horizontal funnel clouds; double funnels; experiments; theories; precipitation. (*Same item as* E–134, May 1950, *MAB.*) *Subject Headings:* **1. Tornado bibliographies 2. Whirlwinds.**—*H.P.K.*

6B–21 551.586:63:016

*†**Mirovoĭ agro-klimaticheskiĭ spravochnik.** [World agroclimatic handbook.] Leningrad, Gidromet. Izdat., **1937.** 418 p. 17 figs., 9 tables, 307 refs. English summary p. 50–53. **DLC, DWB**—This important handbook containing climatic data from all parts of the world, a discussion of methodology and an analysis of the data from an agroclimatic point of view, contains also an extensive bibliography of the best literature from Europe, Asia, Africa, Australia, Canada, United States, Mexico, and South America, arranged alphabetically by author with complete title entries under appropriate geographic areas. Very few of the >300 references are to Russian language material. (*Same item as* 4C-203, March 1953, *MAB.*) *Subject Headings:* **1. Climatic data 2. Frost frequencies 3. Agro-climatological techniques 4. Agricultural climatology bibliographies. I. Selianinov, G. T. II. Gol'tsberg, L. A.**—*M.R.*

1938

6B–22 551.510.41:016 551.510.534:016

†Götz, F. W. Paul, **Das atmosphärische Ozon.** [Atmospheric ozone.] *Ergebnisse der Kosmischen Physik*, Leipzig, 1:180–235, **1931.** 41 figs., 13 tables, eqs., bibliog. p. 230–235 (122 items). Also his: **Die Vertikale Verteilung des atmosphärischen Ozons.** [Vertical distribution of atmospheric ozone.] *Ibid.*, 3:253–325, **1938.** 51 figs., 17 tables, 63 eqs., bibliog. p. 318–325 (items 123–318 in continuation of the above). **DLC**—Methods of atmospheric ozone measurement and results obtained by such measurement are reviewed in detail. Physical laws involved are explained, instruments in use at various institutes described and illustrated and results tabulated and graphically presented. The first article is followed by a bibliography covering world literature in the entire field of ozone research for the period 1879–1931; this is brought up to 1938 in the bibliography following the second article. The bibliography is a list of references to periodical literature; each entry containing author, title and citation. The arrangement is alphabetical by author. *Subject Headings:* **1. Ozone 2. Ozone distribution 3. Ozone bibliographies.**—*G.T.*

6B–23 551.508.21:551.521(02):016

†Kalitin, Nikolaĭ Nikolaevich, **Aktinometriia.** [Actinometry.] Leningrad-Moscow, Gidromet. Izdat., **1938.** 324 p. 161 figs., 147 tables, 141 refs., append. p. 308–316 with 7 tables. **DLC**—Although this book is somewhat obsolete for the present state of actinometry, it is a good systematic and comprehensive introduction to this field. Literature of Russian and foreign writers prior to 1938 is adequately reviewed. A list of 141 references is included. *Subject Headings:* **1. Actinometry bibliographies 2. Textbooks.**—*A.A.*

6B–24 551.574.1:016

†Landsberg, Helmut, **Atmospheric condensation nuclei.** *Ergebnisse der Kosmischen Physik*, Leipzig, 3:155–252, **1938.** 16 figs., 26 tables, 227+41 refs., 59 eqs. **DLC**—This thorough review of knowledge on all phases of atmospheric condensation nuclei up to 1937, contains an extensive bibliography on the entire field. German sources predominate, but non-German sources are extensively covered as well. (*Same item as* A–88, Jan. 1950, *MAB.*) *Subject Heading:* **1. Condensation nuclei bibliographies.**—*M.R.*

1939

6B–25 551.594.5:016

†London. Science Museum. Science Library. **The aurora borealis.** Its *Bibliographical Series*, No. 491, **1939.** 46 p. Mimeo. **DLC**—The 879 references are divided into six groups: books, general articles, photographs, physics, height and geographical distribution, and periodicity. Imprints for the first group are from 1871–1937, for groups 2–6 from 1901–1937. Items in each group are arranged chronologically. The bibliography is not annotated. *Subject Heading:* **1. Auroral bibliographies.**—*M.L.R.*

1940

6B–26 551.509.532:551.524.37:016

†Kessler, Otto Wilhelm and Kaempfert, Wolfgang, **Die Frostschadenverhütung.** [Frost damage prevention.] *Germany. Reichsamt für Wetterdienst, Wissenschaftliche Abhandlungen*, 6(2), **1940.** 243 p. 215 figs., 41 tables, 431 refs. **DLC**—This most comprehensive monograph on frost, frost damage to orchards, vineyards and gardens, and methods of protection employed in Germany, Austria, the Netherlands and America is supported by a bibliography of 431 items, arranged alphabetically by author with original titles cited in most cases. (*Same item as* 3E–242 and 4C–236, May 1952 and March 1953, *MAB.*) *Subject Heading:* **1. Frost forecasting bibliographies.**—*M.R.*

6B–27 551.586:016(02)

†Pfleiderer, H. and Büttner, Konrad J. K., **Bioklimatologie.** [Bioclimatology.] (In: **Lehrbuch der Bäder- und Klimaheilkunde**, ed. by H. Vogt. Berlin, Springer, **1940.** v. 2:699–959. tables,

numerous figs., and bibliog.) **DLC.** Also issued as separated sheets, bound with own title-page. **DWB**—Each chapter contains extensive reference lists. Subjects include climatic variations, radiation, wind, temperature, humidity, atmospheric electricity, aerosols, etc., their measurement, compilation of data and relation to human activity or disease. The work is highly technical and more critical than many similar works. For similar work in textbook form, *see* BUETTNER, KONRAD U. K., **Physikalische Bioklimatologie.** [Physical bioclimatology.] Leipzig, Akademische Verlagsgesellschaft, 1938. 155 p. 167 refs. (*Same item as* 4H-55, Aug. 1953, *MAB.*) *Subject Headings:* 1. **Bioclimatology bibliographies 2. Textbooks.**—*M.R.*

6B–28 551.574.1:016 551.576:016

†Süring, R., **Wolkenbildung, Wolkenstrukture und Niederschlag.** [Cloud formation, cloud structure and precipitation.] *Zentralblatt für Geophysik, Meteorologie und Geodäsie*, Berlin, 5(1):1–10, Jan. 31, **1940.** table, bibliog. p. 9–10. Translation in Russian in *Meteorologiia i Gidrologiia*, No. 12:101–108, Dec. 1940. Translating editor, I. P. Smirnov. **DLC**—The late PROF. SÜRING presents in this review a detailed history of progress in study of the microphysics of clouds (1905–1939), on studies of particular forms of clouds—cirrus, cumulus, and orographic (1889–1939) and on cloud atlases and cloud motion pictures (1930–39). The bibliography contains 50 references to pertinent literature from German and other sources. *Subject Headings:* **1. Cloud physics bibliographies 2. Progress in cloud physics research.**—*M.R.*

1941

6B–29 551.586:612:016(02)

†Düll, Bernhard (*Inst. für Met. und Geophysik, Univ. in Frankfurt a.M.*), **Wetter und Gesundheit, Pt. 1.** [Weather and health, Pt. 1.] Dresden, Theodor Steinkopff, **1941.** 100 p. 46 figs., 3 tables, 38 refs. *Wissenschafliche Forschungsberichte*, v. 54. **DLC**—The monograph discusses: (1) the meaning and fundamental difficulties of "meteorobiological investigations"; (2) the "ionic" weather influence (weather sensation and sensitivity); (3) requirements for an objective investigation of the influence of weather upon man; (4) review of the hitherto used test methods for the experimental demonstration of physiological and psychological disturbances produced by the physical environment; (5) the reaction time of man to sensory stimuli and their suitability as a test reaction for influences of the atmospheric environment and (6) critical observations on the nature of the physical-chemical-physiological mechanisms of the biological action of the atmospheric and solar energy transformations. The list of references gives a good cross section of the best recent literature on physiological and psychological reactions to weather phenomena. *Subject Headings:* **1. Medical meteorology bibliography 2. Climate and health 3. Weather sensitivity 4. Textbooks.**—*I.L.D., M.R.*

1942

6B–30 551.506(093.2)(73)

†Darter, Lewis J. (*comp.*), **List of climatological records in the National Archives.** *U. S. National Archives, Special List*, No. 1, March **1942.** 62+160 p. 94 refs. **DLC**—A detailed and scholarly 62 page history of the various U. S. weather services, and the meteorological records and the climatological networks of the U. S. Weather Bureau after its organization in 1891, is followed by a catalog of climatological records in the National Archives, arranged alphabetically by states and by places within the states, and chronologically for each place. Upper air, marine and hydro-meteorological (self-recording gage) records are excluded. Most of the records cited end in 1892, although the Surgeon General's Office kept records from 1819–1911. Private journals kept from 1720–1895 are included and discussed. *Subject Headings:* **1. Climatological records 2. Meteorological archives 3. History of U. S. Signal Corps 4. History of U. S. Weather Bureau 5. U. S. Surgeon General's Office records 6. United States. I. U. S. National Archives.**—*M.R.*

6B–31 551.583.2:551.311.1(02):016

†Drygalski, Erich v. and Machatschek, Fritz, **Gletscherkunde.** [Glaciology.] Vienna, Franz Deuticke, **1942.** 261 p. 35 figs., 21 photos. Extensive bibliog. at end of each ch. *Enzyklopädie der Erdkunde*, Vienna. **DLC**—This excellent text contains nearly 500 references to articles on glaciers, divided among the various chapters on such special aspects as physics of glaciers, or glacial ice ablation, snow regions and boundaries, ice structure, movement of glaciers, variations in glaciers of Greenland, Alaska, Scandinavia, Antarctica, etc., and finally historical and present day glacial variations in relation to climatic changes. (*Same item as* 5.5–4, May 1954, *MAB.*) *Subject Headings:* **1. Glaciology bibliographies 2. Glaciology textbooks 3. Bibliography on glaciers and climate.**—*M.R.*

6B–32 551.510.42:57:016

†Moulton, Forest Ray (*ed.*), **Aerobiology.** *American Association for the Advancement of Science, Wash., D. C., Publication*, No. 17, **1942.** 289 p. numerous figs., bibliographies throughout. "Sym-

posium presented at a meeting of the American Association for the Advancement of Science, Chicago, 1941, organized by the Section on Medical Sciences." **DLC**—Over 300 references to articles on airborne fungus spores, plant pathogens, insects, microorganisms in marine air and spread over long distances by upper air winds at end of separate articles on these subjects by C. E. ZoBell and others. (*See* B–43, Feb. 1950, *MAB* for authors and titles of 7 pertinent papers.) *Subject Heading:* **1. Aerobiology bibliographies.**—*M.R.*

6B–33 551.573:016

†Thornthwaite, Charles W. and Holzman, Benjamin, **Measurement of evaporation from land and water surfaces.** *U. S. Dept. of Agriculture, Technical Bulletin*, No. 817, **1942.** 143 p. 22 figs., 12 tables, 181 refs., 70 eqs. **DLC**—This classic monograph discusses the nature, measurement, theory and results of a year's measurement of evaporation at Arlington, Va., in 1938, including discussion of theory and measurement of humidity, wind speed, turbulence parameters, etc. for the eventual determination of water losses to atmosphere from land, vegetation and free water surfaces. The extensive bibliography of 181 references is arranged alphabetically by author, with full original titles, etc. (*Same item as* K–117, Nov. 1950, *MAB.*) *Subject Headings:* **1. Evaporation bibliographies 2. Evaporation 3. Arlington, Va.**—*M.R.*

1943

6B–34 551.5:35:016

Fuller, Grace Hadley, **Weather in relation to war. A list of references.** Wash., D. C., Library of Congress, Division of Bibliography, Jan. 7, **1943.** 24 p. about 500 refs. 242 refs. arranged alphabetically by author; remainder chronologically. **DWB**—References are to books of general interest for aviation students, and articles concerning military applications of meteorology and on aeronautical meteorology (1913–1942). About 90 items from the **New York Times** (1939–1942) on weather influences on military operations in various parts of the world are appended. *Subject Heading:* **1. Military meteorology bibliographies.**—*M.R.*

1944

6B–35 551.509.65:016

†London. Science Museum. Science Library, **The dissipation of natural fog. 1931–1941.** Its *Bibliographical Series*, No. 602, **1944.** 1 p. 15 refs. **DLC**—An unannotated bibliography with references to 15 articles in English, French, Italian and German. Two articles on the dissipation of fog by airplanes are included. (*Same item as* 2I–107, Sept. 1951, *MAB.*) *Subject Heading:* **1. Fog dissipation bibliographies.**—*M.P.K.*

6B–36 551.521.64:016

†Miehlnickel, Erwin (*Potsdam*), **Höhenstrahlung (Ultrastrahlung).** [Cosmic radiation. (Ultraradiation).] Dresden, Verlag Theodor Steinkopff, 1938. Lithoprinted, Ann Arbor, Michigan, Edwards, **1944.** 316 p. 23 tables, 69 figs. (incl. photos), bibliogs. at end of each ch. (more than 2700 refs.) *Wissenschaftliche Forschungsberichte, Naturwissenschaftliche Reihe*, ed. by Raphael Ed. Liesegang, v. 44, 1938. **DLC**—A thorough summary of cosmic ray research up to the end of 1937 including a discussion of the effect, intensity, direction, hardness and nature of cosmic rays; cosmic rays in the electric and magnetic fields; secondary and primary radiation and origin of cosmic radiation. An extensive list of references is appended to each chapter and a bibliography of 77 general works completes the volume. *Subject Headings:* **1. Cosmic ray bibliographies 2. Cosmic ray research.**—*M.L.R.*

1945

6B–37 551.5:92:012 551.521:012

†Hand, Irving F., **Biographical note on Herbert Harvey Kimball, 1862–1944, and bibliography of his writings in the Monthly Weather Review and the Bulletin of the American Meteorological Society.** *American Meteorological Society, Bulletin*, 26(5):188–191, May **1945. DWB**—After a brief account of the life of H. H. Kimball, about 140 of his works, dating from 1899 to 1937, are listed. In the early years he wrote on a variety of subjects (he was Librarian of the U.S.W.B. from 1904–1908). Later he wrote mainly in solar radiation, and was recognized as one of the world's authorities on that subject. *Subject Headings:* **1. Biography 2. Solar radiation bibliographies 3. Bibliography of H. H. Kimball 4. Author bibliographies 5. Kimball, H. H. I. Kimball, Herbert Harvey.**—*M.R.*

6B–38 551.5:551.46(02):016

†*Kalle, Kurt, **Der Stoffhaushalt des Meeres.** [Chemical balance of the oceans.] 2nd ed. *Probleme der Kosmischen Physik*, Vol. 23, **1945.** 263 p. charts, diagrs., tables, 420 refs. **MH-BH**—

Contains extensive author-title bibliography on physics and chemistry of the sea, including energy, gas and moisture exchange between sea and atmosphere, condensation nuclei, ocean currents. (*Same item as* 3.4–6, April 1952, *MAB.*) *Subject Headings:* **1. Energy exchange bibliographies 2. Ocean chemistry bibliographies.**—*M.R.*

6B–39 551.311.181:016(268)

†Zubov, N. N., **L'dy Arktiki.** [Arctic ice.] Moscow, Glavsevmorput' Izdat., **1945.** 360 p. 95 figs., 121 tables, 179 refs. **DPL, DLC**—A comprehensive treatise on the physical and chemical properties of sea waters, the processes changing the temperature and salinity of the ocean, the processes forming water masses, the interaction between the ocean and atmosphere and the formation properties and behavior of the ice of the Arctic Ocean. The bibliography of 179 references is arranged alphabetically by author. (*Same item as* 5A–38 and 5I-140, Jan. and Sept. 1954, *MAB.*) *Subject Headings:* **1. Arctic ice 2. Arctic ice bibliographies 3. Arctic Ocean.**—*I.L.D.*

1946

6B–40 551.465:016

†Lee, Claude C., **Waves and wave action.** A bibliography of books, periodicals and society publications appearing from 1687 through March 1946. Rev. ed. **1946.** Loose leaf. 91 p., plus supplementary leaves with decimal notation for ease of inclusion. **DWB**—The 976 references, including the 110 references on Seiches in Suppl. No. 1 (append.), are arranged alphabetically by author; supplementary chronological indexes. Foreign titles translated. Some articles are abstracted. A bibliography prepared for the engineering profession as a whole. (*Same item as* 5K-27, Nov. 1954, *MAB.*) *Subject Headings:* **1. Ocean wave bibliographies 2. Seiches.**—*M.P.K.*

1947

6B–41 551.583:016

†Hansen, Henry Paul, **Postglacial forest succession, climate and chronology in the Pacific Northwest.** *American Philosophical Society, Transactions,* 37(1):1–130, **1947.** 130 p. 114 figs., bibliog. p. 123–126. **DLC**—In connection with a comprehensive monograph on pollen analysis and related techniques for dating species and determining the climate of the Pacific Northwest in past ages, there is a most complete list of references on this field of ecoclimatology or paleoclimatology. (*Same item as* G–176, July 1950, *MAB.*) *Subject Headings:* **1. Climatic change bibliographies 2. Pollen analysis 3. Pacific Northwest.**—*M.R.*

6B–42 551.510.42:57:016

†Hawes, Ina L. and Eisenberg, Rose (*comps.*), **Bibliography on aviation and economic entomology.** U. S. Dept. of Agriculture, Bibliographical Bulletin, No. 8, April **1947.** 186 p. See subject index, p. 162, under Climate and weather for refs. This bibliography, which is a revision and enlargement of the **Bibliography on the use of airplanes in insect control, 1922–1933,** compiled by W. E. McBath in 1934, covers the years 1919–1944. **DA**—Annotated references on all aspects of insect control and collection by means of airplanes. Complete subject and author index contains many subjects of interest to meteorologists and climatologists working in fields of aerobiology—insect, dusting spread of insects by winds, etc. (*Same item as* B 144, Feb. 1950, *MAB.*) *Subject Headings:* **1. Aviation control of insects 2. Economic entomology 3. Bibliography on aerobiology. I. McBath, W. E.**—*H.P.K.*

6B–43 551.575:016

†Leipper, Dale F., **Fog bibliography.** California. University. Scripps Institution of Oceanography, Contract N6ori-211, Fog Project Report, No. 1, **1947.** 14 p. Mimeo. **DWB**—A bibliography of the more significant articles on fog and related phases of temperature and stratus cloud. There is a definite "west coast of U. S." bias in the selection. There are four pages of French and German references. (*Same item as* 3F–102, June 1952, *MAB.*) *Subject Heading:* **1. Fog bibliographies.**—*G.C.B.*

6B–44 551.510.535:016

†Manning, Laurence A. (*comp.*), **A survey of the literature of the ionosphere.** Stanford University. Dept. of Engineering, Contract W33-038 ac-14737, High Altitude Radio Frequency Propagation, Final Report No. 1-FI, Aug. 30, **1947.** 278 p. figs., refs. **DWB**—An extensive annotated bibliography of about 1000 items. (*Same item as* 4F–35, June 1953, *MAB.*) *Subject Heading:* **1. Ionosphere bibliographies.**—*M.P.K.*

6B–45 551.510.535:016

†Pande, A., **Critical survey of recent theoretical work on the ionosphere.** *Terrestrial Magnetism and Atmospheric Electricity,* 52(3):375–396, Sept. **1947.** 118 refs., 2 eqs. **DLC**—The survey is

divided into 6 sections: (1) Determination of ionization-density, (2) Propagation of electromagnetic waves through the ionosphere, (3) Dissociation, recombination-, attachment-, and detachment-processes in the ionosphere, (4) Determination of electron collisional frequencies in the ionosphere, (5) Composition and temperature of the upper atmosphere, (6) Practical applications of the theory. The 118 references (1912–1942) are arranged in the order in which they are discussed in these 6 sections. *Subject Headings:* **1. Bibliography on ionosphere 2. Progress in ionospheric research.** —*M.R.*

1948

6B–46 551.508:551.584:016

†Baum, Werner A. (*comp.*), **The climate of the soldier. Pt. 1, Microclimatic instruments and methods: an annotated bibliography. Pt. 2, Microclimatic investigations: a bibliography.** *U. S. Quartermaster Corps. Research and Development Branch, Environmental Protection Series*, No. 124, Pt.1, Jan. **1948**; Pt. 2, Feb. **1948.** Pt. 1, 88 p. 594 refs. Pt. 2, 73 p. 1018 refs. Pt. 2 unannotated. By subject groups. No author indexes. **DWB**—Pt. 1 contains 594 references to articles, from the leading journals and sources in every language, on micro-meteorological instruments, arranged alphabetically under 18 headings in 40 general categories: A, Instrument design and construction; B, Instrument accuracy, calibration and theory; C. Methodology and D, Miscellaneous, with subheadings covering air temperature, moisture, wind; soil temperature, moisture, evaporation, etc. Original titles are given except when in Russian and brief annotations provided for most entries. Pt. 2 contains 1018 references which are arranged alphabetically by author under 9 major heads (including radiation, heat balance and snow surface as well as the heads contained in Pt. 1). *Subject Headings:* **1. Micrometeorological instrumentation bibliographies 2. Annotated bibliographies. I. Contract W-44-109-QM-1810 II. Maryland. University.**—*M.R.*

6B–47 551.586:612(02):016

†Berg, Hellmut, **Wetter und Krankheiten.** [Weather and diseases.] Bonn, H. Bouvier, **1948.** 140 p. 48 figs., 153 refs. **DLC**—Extensive references on cosmic and atmospheric factors in disease, methods of research and the mechanism of spreading disease. Cancer as well as epidemic diseases are considered. References are arranged by chapter at end of book—hence are semi-classified. (*Same item as* 9–138, Sept. 1950, *MAB.*) *Subject Headings:* **1. Bibliography on weather and disease 2. Medical meteorology bibliographies.**—*M.R.*

6B–48 551.573:551.551:016

†Budyko, M. I., **Isparenie v estestvennykh usloviiakh.** [Evaporation under natural conditions.] Leningrad, Gidromet. Izdat., **1948.** 135 p. 26 figs., 8 tables, 235 refs., 107 eqs. **DLC**—The author, in this technical monograph, has summarized and organized the results of a vast amount of native and foreign research (both theoretical and practical) on evaporation and turbulent exchange from the soil and from water surfaces. The literature cited covers the entire period of instrumental investigations into the laws governing evaporation, from HALLEY (1687–1694), RICHMAN (1744–1751) and WILD (1874) to PRANDTL (1944) and SHEPPARD (1947) on one hand, and BUDYKO (1945–1948), LAĬKHTMAN (1947), ABUKHOV (1946) and IUDIN (1940–1948) on the other. (*Same item as* 3.7–153, July 1952, *MAB.*) *Subject Headings:* **1. Bibliography on evaporation 2. History of meteorology.** —*M.R.*

6B–49 551.556.4:551.510.42(02):016

†DallaValle, Joseph Marius, **Micromeritics: the technology of fine particles.** 2nd ed. New York, Pitman, [**1948**] 555 p. 131 figs., 88 tables, bibliog. p. 496–538, eqs., append. Price: $8.50. **DWB**—A technical text for engineering students covering all aspects of the science of physics of small particles, and application of this knowledge to soil physics, hydrology, industrial operations, etc. Methods of measuring particles, units, the behavior of particles in fluids, equations of motion of various types; size, shape and size distribution, settling, packing, sieving, calibration of instruments, behavior of particles under pressure, diffusion (thermal, turbulent and point source), electrical, optical and acoustical aspects; thermodynamics of small particles (heat transfer); surface properties (absorption, condensation, evaporation, hygroscopicity); chemical properties; transport by water and wind (sand dunes, atmospheric dust and its sampling, pollution and its control). This second edition contains a great deal of material not included in the first (1943) edition. For instance, the chapter on particle dispersion by eddy diffusion is much more comprehensive and leads to new treatment of the physics of smoke, dust and sand movement. Most of the chapters have been revised, expanded or re-written. The bibliography is most extensive, comprising over 600 entries (43 pages). A major portion of the work is devoted to theoretical treatment, although each such treatment leads to definite applications. (*Same item as* 4.9–4, Sept. 1953, *MAB.*) *Subject Headings:* **1. Micromeritics bibliographies 2. Physics of small particles.**—*M.R.*

6B–50 551.590.21:016(02)

†Eigenson, Moris Semenovich, et al., **Solnechnaia aktivnost' i eë zemnye proiavleniia.** [Solar activity and its terrestrial manifestations.] Moscow, OGIZ, **1948.** 323 p. 111 figs., 45 tables, 411 refs. **DLC**—Discusses solar activity: nature, cyclical changes, sunspots, ultraviolet rays reaching earth, solar corpuscles, ionospheric processes, effect of ultraviolet rays and corpuscles on ionosphere and geomagnetism; relation to tropospheric phenomena; ozone, radiation, heat, colloidal processes, air masses, seasonal changes, auroras. An extensive list of references arranged according to the 4 sections of the book: I. Solar activity, II. Solar-ionospheric relations, III. Solar-geomagnetic relations and IV. Solar-tropospheric relations covers the most important Russian and non-Russian articles on this subject. (*Same item as* 5–105, May 1950, *MAB.*) *Subject Headings:* **1. Solar-terrestrial relations 2. Bibliography on solar influences 3. Textbooks.**—*M.R.*

6B–51 551.578.4:551.579:06:016

†I.U.G.G. Association of Scientific Hydrology, Oslo, August 19–28, **1948, Assemblée Général. (Proceedings).** (1950?). 3 v. tables, refs., eqs., photos., bibliog. Contents: v. 1, **Travaux des Commissions de Potomologie et de Limnologie.** 399 p. v. 2, **Travaux de la Commission de la Niege et des Glaciers.** 407 p. v. 3, **Travaux de la Commission des Eaux Souterrainnes.** 308 p. **DWB**—Contains numerous reports in French, German and English including extensive bibliography of work done in many countries. *Subject Headings:* **1. Snow research 2. Hydrologic bibliographies 3. Conferences. I. I.U.G.G. Assoc. of Scientific Hydrology. Commission on Potamology II. I.U.G.G. Assoc. of Scientific Hydrology. Commission on Limnology III. I.U.G.G. Assoc. of Scientific Hydrology. Commission on Snow and Glaciers IV. I.U.G.G. Assoc. of Scientific Hydrology. Commission on Subterranean water.**—*M.R.*

6B–52 551.521.4(02):016

†Khvostikov, I.A., **Svechenie nochnogo neba.** [Light of the night sky.] 2nd rev. ed. Moscow, Akademiia Nauk, **1948.** 495 p. plates, diagrs., 434 refs., eqs. **DLC**—This book reviews knowledge of the luminous phenomena in the upper atmosphere in a systematic fashion, and presents a list of 434 references to articles (50 in Russian periodicals) on aurora, light of the night sky, green line, sodium, oxygen, infrared radiation, fluorescence, polarization, sunlit auroras, noctilucent clouds, meteor trails, etc. (*Same item as* 2.10–99, Oct. 1951; 4J–245, Oct. 1953, *MAB.*) *Subject Headings:* **1. Night airglow bibliographies 2. Auroral physics bibliographies 3. Textbooks.**—*M.R.*

6B–53 551.588.6:631.4(02):016

Kittredge, Joseph, **Forest influences: the effects of woody vegetation on climate, water, and soil, with applications to the conservation of water and the control of floods and erosion.** New York, McGraw Hill, **1948.** 394 p. 24 figs., 71 tables, 381 refs. **DWB**—The extensive list of references covers items on climatic regions; solar radiation and light; air temperature, wind, moisture and precipitation, stream flow, fog drip; evaporation of snow from forest and soil; soil temperature, moisture, floods, erosion, etc. (*Same item as* 2–175, Feb. 1950, *MAB.*) *Subject Headings:* **1. Forest influences 2. Bibliography on forest influences 3. Hydrology 4. Textbooks.**—*M.R.*

6B–54 551.573:016

London. Science Museum. Science Library, **Evaporation from land and water surfaces, 1930–1948.** Its *Bibliographical Series*, No. 658, (**1948**). 7 p. 110 refs. **MH-BH**—Unannotated list of references to English, German and French literature on evaporation, arranged in chronological order. (*Same item as* K–210, Oct. 1950, *MAB.*) *Subject Heading:* **1. Evaporation bibliographies.**—*H.P.K.*

6B–55 551.582(495):016

†*Philippson, Alfred, **Das Klima Griechenlands.** [The climate of Greece.] Bonn, Ferd. Dummlers, **1948.** 238 p. tables, charts, 99 refs. **DWB, MH-BH**—Extensive bibliography, arranged alphabetically by author, of articles on climate of Greece and meteorology of the Eastern Mediterranean. (*Same item as* 4–128, April 1950, *MAB.*) *Subject Headings:* **1. Bibliography on climate of Greece 2. Climate of Greece 3. Greece.**—*M.R.*

6B–56 551.509.317:016(02)

†Scherhag, Richard, **Neue Methoden der Wetteranalyse und Wetterprognose.** [New methods of weather analysis and weather forecasting.] Berlin, Springer-Verlag, **1948.** 424 p. 213 figs., 43 tables, 897 refs. **DWB, MH-BH**—This elaborate text contains a bibliography with 897 references to literature of various countries on numerous aspects of synoptic analysis, especially of the 3-dimensional or synoptic-aerological type, but not neglecting the historical works (Brandes, 1826) or the 60 articles written by the author himself between 1931 and 1943. Although published in 1949, the citations are almost without exception prior to 1945. (*Same item* as 1-52, Jan. 1950, *MAB.*) *Subject Headings:* **1. Synoptic aerology bibliographies 2. Textbooks.**—*M.R.*

6B–57 551.525.5:016

†Sundstrom, Mabel; Romanoff, Anastasia and Van Royen, William (*all of Maryland Univ.*), **The Russian Arctic, Pt. 1, Land forms, permafrost and vegetation of European Russia. An annotated bibliography.** *U. S. Quartermaster Corps. Research and Development Branch, Environmental Protection Series Report,* No. 127, April **1948.** 42 p. 313 annotated items. **DWB**—About 25% of the bibliography is devoted to permafrost, its thermal regime, ice formations and climatic effects. Some climatic aspects are covered also under the subdivision: vegetation. *Subject Headings:* **1. Permafrost bibliographies 2. European Russia 3. European Arctic.**—*A.A.*

6B–58 551.510.42:019.941

U. S. Atomic Energy Commission, **Nuclear Science Abstracts,** v. 1, July 15, **1948–.** Latest issue seen, 8(11), June 15, 1954. Semi-monthly. Issued by the Technical Information Service, Oak Ridge, Tennessee. Supersedes the Commission's **Abstracts of Declassified Documents,** and Its **Guide to Published Research on Atomic Energy.** Editor, Everett J. Hoffman. Price: $6.00 yearly from U. S. Govt. Print. Off., Wash. 25, D. C. Quarterly Indexes cumulate as Pt. B, of last issue of each year into corresponding Author, Subject and Report Number Indexes. Similar Cumulative Index, covering v. 1–4, issued as v. 4, no. 24B, Dec. 30, 1950. The next Cumulative Index, covering v. 5–10, to appear in v. 10, 1956. Indexes unclassified and declassified research reports of the AEC, and also pertinent material from journals and reports and unpublished research from government agencies, universities and industrial research establishments. Each issue contains information as to where the reports abstracted are available, whether on loan or by purchase, or in what journal they may be found. **DLC**—In the quarterly indexes a number of (about 200 a year) items of interest to meteorologists are found under aerosols, air, atmosphere, gases, barometers, cosmic radiation, meteorites, meteorology, meteorological instruments, microwaves, stack disposal, and under geographic places such as Brookhaven, Hanford, etc. The general nature of the material is usually related to turbulence, micrometeorology, instrumentation, atmospheric pollution, sampling, diffusion and atomic physics. In each issue the meteorological material is collected under the main heading, Physics, and the subheadings Aerosols, Astrophysics, Cosmic Radiation, Meteorology, Microwaves. Abstracts are of varying length and degree of informativeness. *Subject Headings:* **1. Nuclear science abstracts 2. Atmospheric pollution abstracts.**—*M.R.*

6B–59 551.5:016

†U. S. Library of Congress, **Monthly List of Russian accessions,** 1(1), April **1948–.** Latest issue seen, 7(8), Nov. 1954. Price: $9.00 yearly from U. S. Govt. Printing Off., Wash. 25, D. C. Orders for microfilm or photostat copies of items in L.C. collection are obtainable from its Photoduplication Service, Wash. 25, D. C. Each monthly issue in 4 parts. Pt. A, Monographs pub. since **1945,** listed alphabetically in 17 subject groups. Translated title with transliterated title. Pt. B, Periodicals issued from 1947–, alphabetically in 17 subject groups, with contents of each issue of the periodical. Pt. C, Subject guide to Pts. A and B. Cumulative list of periodicals indexed in v. 6–7, with abbreviations. Pt. D, List of monographs published in Russia recently, but not yet located, with English transliterations of title. Pt. C comprises more than half of each Monthly List. Also **Cumulative Index,** v. 1–3, April 1948–March 1951. pub. 1953. 307 p. Price: $1.50 from Govt. Print. Off. Cumulative author and subject indexes for monographs, and location and subject indexes for periodicals. "Index to v. 4 in preparation. Beginning with v. 5, an author index to the monographs, and a periodical location index for the entire v. are furnished as appendices to the first issues of the following volume." **DLC** (Slavic)—All of the important and many minor Soviet scientific periodicals and monographs from all parts of the Soviet Union are analyzed for contents, or listed under the various headings (12, Geography and Geology, 13. Science) and amply indexed. Meteorological articles are to be found under headings such as Atmosphere (and subdivisions), Climatology, Clouds, Meteorology, etc. *Subject Headings:* **1. Russian accessions 2. Russian meteorological literature 3. U.S.S.R.**—*M.R.*

6B–60 551.515.2:016(02)

†U. S. Weather Bureau, **Hurricane notes.** Its *Training Paper,* No. 1, July **1948.** 210 p. numerous figs. (incl. photos.), 217 refs., Appendix B, **A few brief abstracts of recent literature on tropical cyclones,** p. 203–207. **DWB**—The excellent list of references on hurricane theory, dynamics and movement is arranged chronologically, beginning with Redfield (1839) and ending with 8 articles published in **1947.** The appendix lists 28 articles from 1943–47 with annotations for each. The manual discussed all aspects of hurricane theory, observation and forecasting in a systematic manner, with synoptic charts, radar photographs, drawings, etc. (*Same item as* 3.2–79, Feb. 1952, *MAB.*) *Subject Headings:* **1. Hurricane bibliographies 2. Hurricane theory 3. Textbooks.**—*M.R.*

6B–61 551.5:92:016 551.58

†Voeĭkov, Aleksandr Ivanovich, **Izbrannye sochineniia.** [Selected works.] Moscow, Akademiia Nauk. **1948.** 750 p. 23 figs., port., numerous tables, bibliog. 93–160, biographical data p. 83–90.

MH-BH—The first volume of the selected works of A. I. VOEĬKOV contains a comprehensive description and evaluation of the climatological ideas of VOEĬKOV by A. A. GRIGORIEV; a biography and a description of the scientific activities of VOEĬKOV by G. D. RIKHTER; a complete bibliography of VOEĬKOV's writings and the complete text, including the maps, of VOEĬKOV's classic book **Climates of the earth and especially of Russia,** which first appeared in 1884 and which appeared in a revised and augmented edition in German in 1887. (*Same item as* 3.4–4, April 1952, *MAB.*) *Subject Headings:* **1. Climatology 2. Biography 3. Voeĭkov, Aleksandr Ivanovich 4. Author bibliographies 5. Bibliography of Aleksandr I. Voeikov.**—*I.L.D.*

1949

6B–62 551.594:016 550.38:016

†Harradon, H. C., **Bibliographic notes and selected references.** *Physics of the Earth,* New York, 8:679-778, [**1949**]. 1523 refs. **DLC**—Article comments briefly on international scientific bodies engaged in geophysical research with mention of meetings held and their reports; lists the more important publications of observatories and institutions publishing magnetic data; describes six journals devoted largely to works on geophysics, terrestrial magnetism, electricity, etc., and six other journals which frequently publish articles in these fields; notes publications devoted to bibliography and abstracts and lists 1523 references to articles on (A) Terrestrial Magnetism, (B) Terrestrial Electricity, (C) Geophysical Prospecting, (D) Ionosphere, (E) Cosmic Radiation, (F) Radioactivity, (G) Ozone and (H) Miscellaneous—with about half of the references under (A) and (B). Items are arranged alphabetically by author under the various sections. The bibliography is not annotated but papers containing summaries of the subject they treat or valuable or extensive bibliographies are indicated by a brief note. *Subject Headings:* **1. Bibliography on atmospheric electricity 2. Terrestrial magnetism bibliographies.**—*M.L.R.*

6B–63 551.511:532(02):016

†Prandtl, Ludwig, **Führer durch die Strömungslehre.** [Guide to fluid dynamics.] 3rd ed. (5th ed. of original.) Brunswick, Friedr. Vieweg und Sohn, **1949.** 407 p. 347 figs., numerous refs., numerous eqs., append., classified bibliog. **MH-BH**—A textbook on hydrodynamics containing much theoretical material that is basic to all branches of meteorology. Numerous references in footnotes as well as a classified bibliography are included. For English translation *see item* 4A–205, Jan. 1953, *MAB.* (*Same item as* 9–54, Sept. 1950, and 4A–123, Jan. 1953, *MAB.*) *Subject Headings:* **1. Fluid mechanics bibliographies 2. Textbooks.**—*M.R.*

6B–64 551.588.7 551.58:081

†Voeĭkov, Aleksandr Ivanovich, **Vozdeĭstivie cheloveka na prirodu.** [The influence of man on nature.] Moscow, Gos. Izdat., **1949.** 255 p. tables, bibliog. p. 251–255. **DLC**—This is a collection of 14 articles by the well-known Russian geographer and climatologist, A. I. VOEĬKOV, treating the question of the interrelation between man and nature. Two papers bearing the same title as the book, are its main feature. They emphasize the idea that man influences nature, converts it and takes possession of its resources. The other articles treat the questions of: land improvement, climate and national economy; man and water; man and soil; woodlands of the Pinsk region, colonization of the North; rivers and water ways, and subtropical agriculture. The book is prefaced by a lengthy article by the editor, V. V. POKISHEVSKIĬ, gives brief biographical information and a review of VOEĬKOV's scientific activity and published works in which the often expressed capitalistic tendencies of the scientist are criticized from the Marxist point of view. The book concludes with a long series of annotations (153) and 90 references to VOEĬKOV's works touching in greater or lesser degree upon man and the geographical environment, geography of population and social and economic geography. *Subject Headings:* **1. Climatic amelioration 2. Collected works 3. Author bibliographies 4. Bibliography of Aleksandr I. Voeĭkov 5. Pokishevskiĭ, V. V.**—*A.M.P.*

1950

6B–65 551.510.41:523.4:535.214:016

†Bibliography of spectroscopy and radiometry of planetary atmospheres (and related subjects) 1920 to 1950. (In: Flagstaff, Arizona. Lowell Observatory, **The project for the study of planetary atmospheres.** Contract AF 19(122)-162, Annual Report, Sept. **1950.** p. 67–70, Mimeo.) **DWB**—1) General references on planetary atmospheres—methods of investigation and characteristics of spectra and 2) specific references on the planetary atmospheres of Venus, Mars and the other major planets. (*Same item as* 3.7–100, July 1952, *MAB.*) *Subject Headings:* **1. Spectroscopy bibliographies 2. Radiometry 3. Planetary atmospheres.**—*I.L.D.*

6B–66 551.508:016

†Blue Hill Meteorological Observatory, **Bibliography of meteorological instruments.** Cambridge, Mass., Harvard University, **1950.** 165 p. (U. S. Weather Bureau, Contract Cwb 8120.)

DLC—The catalog cards on meteorological instruments from the library of the Blue Hill Observatory were laid out 3 or 4 to a page, in the order in which they would appear in the U.D.C. scheme for meteorology, and reproduced. There are about 500 entries, some of which are annotated. No subject or author index is provided. (*Same item as* 2.8–20, Aug. 1951, *MAB.*) *Subject Headings:* **1. Meteorological instruments 2. Bibliography on meteorological instruments.**—*M.R.*

6B–67 551.583.3:016

†Brooks, Charles Ernest Pelham, **Selective annotated bibliography on climatic changes.** *Meteorological Abstracts and Bibliography*, Boston, 1(7):446–475, July **1950.** 201 refs. **DLC, MH-BH**—The 201 annotated references are arranged in chronological order under the following sections: I. General, and theories of the cause of climatic change; II. Climatic changes in geological time, including the Quaternary Ice Age; III. Climatic changes in the Post-glacial and Historical Periods; IV. Climatic changes shown by instrumental meteorological observations (roughly since A.D. 1700). The various aspects of the subject covered in the bibliography are indicated in an outline. An outline of geographic areas is also included. *Subject Heading:* **1. Climatic change bibliographies.**—*M.L.R.*

6B–68 551.586:016

†Cordes, H. (*comp.*), **Bibliographie "Klima und Mensch," 1945–1949.** [Bibliography "Climate and Man," 1945–1949.] Bad Kissingen, **1950.** 96 p. Compilation and abstracts by Dr. H. Cordes. **DWB**—A well-organized and annotated bibliography of 445 items published in German (with a few foreign articles) during the post-war period (1945–49). Lists major meteorological and medical periodicals from which the literature is selected (with editor and plan of publication of each). References are to: 1) basic works, texts, history, research methods, instrumentation; 2) works on specific meteorological elements; 3) physiological climatology (skin, blood, respiration, nervous system, acclimatization, etc.); 4) meteorology (pathology, effect of seasons, epidemiology); 5) climatotherapy and 6) indoor and city climate. (*Same item as* 4.2–256, Feb. 1953, *MAB.*) *Subject Headings:* **1. Bioclimatology bibliographies. I. Germany. Deutscher Wetterdienst in der U. S.-Zone.**—*M.R.*

6B–69 551.521.1:016

†Crabb, George A., Jr., **Solar radiation investigations in Michigan.** *Michigan. State College. Agricultural Experiment Station, Technical Bulletin*, No. 22, Oct. **1950.** 153 p. 49 figs., 10 tables, bibliog. p. 76–153. **DWB**—Appended to the report is a list of nearly a thousand references to literature on all phases of solar radiation, arranged alphabetically by author, as copied from reference lists and the card catalogs of the Blue Hill Observatory Library and the WPA Bibliography (*see* 6A-77, Jan. 1955, *MAB*). (*Same item as* 2.8–78, Aug. 1951, *MAB.*) *Subject Heading:* **1. Solar radiation bibliographies.**—*M.R.*

6B–70 551.510.534:016

†Craig, Richard A., **The observations and photochemistry of atmospheric ozone and their meteorological significance.** *Meteorological Monographs* (American Meteorological Society), 1(2), Sept. **1950.** 50 p. 18 figs., 4 tables, 119 refs., append. (with 36 tables and eqs). **DWB**—The most comprehensive treatment of the problem of ozone in the free atmosphere in the English language with a thorough bibliography and appendix containing a large amount of data gathered in various parts of the world, and constants derived therefrom. (*Same item as* 2.1–67, Jan. 1951, *MAB.*) *Subject Heading:* **1. Ozone bibliographies.**—*M.R.*

6B–71 551.510.034(02):016

†Fabry, Charles, **L'ozone atmosphérique.** [Atmospheric ozone.] Paris, Centre National de la Recherche Scientifique, **1950.** 278 p. 75 diagrs., tables, 155 refs., eqs. Biographical note p. 3–5. **MH-BH**—A comprehensive treatment of every aspect of atmospheric ozone in the light of present theoretical and empirical knowledge. An excellent list of references, reviewed in the text, is included. (*Same item as* 3.8–71, Aug. 1952, *MAB.*) *Subject Headings:* **1. Ozone bibliographies 2. Ozone research 3. Textbooks.**—*M.R.*

6B–72 551.584(02):016

†Geiger, Rudolf, **Das Klima der Bodennahen Luftschicht. Ein Lehrbuch der Mikroklimatologie.** [The climate near the ground. A textbook of microclimatology.] 3d ed. rev. & enl. Brunswick, Vieweg, **1950.** 460 p. 195 figs., tables, bibliog. p. 408–446 (over 935 items). *Die Wissenschaft*, ed. by Prof. Dr. Wilhelm Westphal, v. 78. 1st edition, 1927. 2d edition, 1941. The 2d rev. and enl. English translation by Milroy N. Stewart (*see* 2.1–158, Jan. 1951, *MAB*) incorporated most supplementary material furnished by the author from this impending 3rd German edition. **DWB, DLC**—This most complete bibliography on microclimatology is divided into 42 sections corresponding to the 42 chapters of the 3rd edition. (The bibliography in the second English edition (1950) con-

tains additions to bring the second edition up to the 3rd German Edition.) The wide variety of subjects treated in the 42 chapters makes this equivalent to a classified subject bibliography on radiation, heat exchange, soil temperature, mass exchange, cooling processes, instrumentation, temperature regime, temperature gradient, humidity, wind, optical and acoustical phenomena, dust, CO_2, albedo, temperature of surface objects, influence of soil and soil cover, lakes and inland waters, snow, evaporation, radiation on slopes, drainage of air, cave climate, effect of plants, trees, forests, etc. on all the meteorological elements including precipitation, animals and microclimate, city climates, artificial wind and frost protection belts (shelter belts), and finally microclimatic observations and charting. The author index refers to items in the bibliography as well as in the text. The material covers most of the world's literature in the field, from earliest times down to 1950, though most of the references prior to 1929 (1st edition) are deleted to make room for the rich and intensive literature—especially from Germany sources—since 1929. Citations are very carefully and accurately given. In the English edition chapter headings are translated, but not titles. (*Same item as* 4C–291, March 1953, *MAB.*) *Subject Headings:* **1. Bibliography on microclimate 2. Textbooks 3. Translations.**—*M.R.*

6B–73 551.5:63:016

†Germany. Deutscher Wetterdienst in der US-Zone, **Agrarmeteorologische Bibliographie, 1949, Teil 1–2.** [Agro-meteorological bibliography, 1949, Pt. 1–2.] Bad Kissingen, **1950–1952.** 2 pieces. about 250 p. each. **DWB**—This annotated bibliography of agricultural meteorology is a continuation of the agricultural meteorological bibliography issued by the German weather service up until 1941. This first volume contains all accessions received by the German Weather Service in the U. S. Zone between Jan. 1 and July 1, 1949 and also important items of earlier date going back as far as 1941. The subject matter covered is divided into the following sub-divisions, viz.: 1) local climate, microclimate and crop climate; 2) weather, climate and soil; 3) weather, climate and plants; 4) weather, climate and agriculture; 5) weather, climate and plant diseases; 6) weather, climate and animals; 7) apparatus and methods of investigation; 8) important publications in neighboring scientific disciplines. The second volume contains over 1000 reference (with abstracts) following the same arrangement. A list of several hundred journals and serials, and annotations regarding 50 of the most important periodical sources, author and subject indexes are also included in Pt. II. (Pt. 1, *same item as* 3.2–167, Feb. 1952; Pt. 2, *same item as* 4.3–19, March 1953, *MAB.*) *Subject Heading:* **1. Agricultural meteorology bibliographies.**—*I.L.D., M.R.*

6B–74 551.594.2:016

†Israël, Hans (*ed.*), **Das Gewitter. Ergebnisse und Probleme der modernen Gewitterforschung.** [The thunderstorm. Results and problems of modern thunderstorm research.] Leipzig, Akademische Verlagsgesellschaft Geest & Porting, **1950.** 240 p. numerous figs. (incl. photos), tables, bibliog. (1939–1949) p. 220–241. Introduction in German, French and English. **MH-BH**—Contains 431 references to material on thunderstorms and thunderstorm electricity, arranged by years from 1939–1949. Also critical reviews (p. 191–219) of a score of major works on thunderstorm physics and lightning. (*Same item as* 3.9–8, Sept. 1952 and 4K–218, Nov. 1953, *MAB.*) *Subject Headings:* **1. Thunderstorm electricity bibliographies 2. Cloud physics bibliographies.**—*M.R.*

6B–75 551.510.53:016

†Kellogg, William W. and Schilling, G., **Survey of data and theoretical analysis of the upper atmosphere.** California. Univ. Institute of Geophysics, Contract Cwb 7904, Final Report, June **1950.** Each section renumbered. Contains: Kaplan, J., **Introduction.** Pt. I, Schilling, G. F., **Methods and results of upper atmosphere research.** 41 p. numerous bibliogs., 17 figs. Pt. II, Kellogg, William W., **Turbulence in the upper stratosphere.** 12 p. 4 figs., 24 refs. Pt. III, Kellogg, W. W. and Schilling, G. F., **Tentative model for the general circulation in the stratosphere.** 7 p. 5 refs. Pt. IV, Kellogg, W. W., **Atmosphere above 100 km.** 64 p. 21 figs., 9 tables, 67 refs., 62 eqs. **DLC**—References are mainly to literature on the ozonosphere and ionosphere. *Subject Headings:* **1. Bibliography on ionosphere 2. Bibliography on the ozonosphere.**—*M.R.*

6B–76 551.510.42:016

†Kramer, Harris P. and Rigby, Malcolm, **Cumulative annotated bibliography on atmospheric pollution by smoke and gases.** *Meteorological Abstracts and Bibliography,* Boston, 1(1):46–71, Jan. **1950.** 240 refs. Also: Kramer, Harris P., **Cumulative annotated bibliography on aerobiology and its applications to meteorology.** *Ibid.,* 1(2):119–135, Feb. **1950.** 145 refs. Also her: **Selective annotated bibliography on volcanic dust.** *Ibid.,* 1(6):366–375, June **1950.** 66 refs. **MH-BH**—The first bibliography contains 240 annotated references emphasizing air sampling and analysis, effects of atmospheric pollution and programs being carried out in the U. S. and abroad to control atmospheric pollution as indicated in a detailed prefatory outline. Items are arranged chrono-

logically by date of imprint—the earliest being 1661. In the second bibliography, the bulk of the references are divided under two headings: I. Dispersion of Microorganisms in the Atmosphere and II. Insect Population of the Air. The arrangement is chronological and the bibliography is annotated. The third bibliography, containing 66 annotated references, deals with the effects of volcanic dust on radiation and climate and reports of major volcanic eruptions (from Iceland, 1783 to Katmai, 1912). *Subject Headings:* **1. Atmospheric pollution bibliographies 2. Aerobiology 3. Volcanic dust.**—*M.L.R.*

6B–77 551.574.1:016

†Kramer, Harris P. and Rigby, Malcolm, **Selective annotated bibliography on cloud physics and "rain making."** *Meteorological Abstracts and Bibliography*, Boston, 2(3):174–205, March **1950.** 204 refs. **DLC.** Also: Harris, D. Lee, **A short bibliography on artificial production of precipitation.** U. S. Weather Bureau, June 1, 1950; rev. Feb. 18, 1952. 6 p. **DWB**—The first bibliography contains 204 annotated references to literature on: I. Physics of precipitation formation and condensation and II. Artificial modification of clouds. Items are arranged chronologically within each section. The various aspects of these two subjects are indicated in an outline. The second bibliography lists 58 items to supplement the above special bibliography on cloud physics and rain making. *Subject Heading:* **1. Bibliography on cloud physics.**—*M.R.*

6B–78 551.572.47:629.13:016

†Kramer, Harris P., **Selective annotated bibliography on icing.** *Meteorological Abstracts and Bibliography*, Boston, 1(9):593–619, Sept. **1950.** 181 refs. Also: Zikeev, Nikolay T., **Annotated bibliography on glaze and rime at the earth's surface.** *Ibid.*, 3(10):1066–1101, Oct. **1952.** 237 refs. **MH-BH**—The icing bibliography consists of 181 references, with annotations, to literature dealing particularly with the icing of aircraft. Items include references to icing forecasting and icing research. The bibliography on glaze and time contains 237 annotated references to works dealing with ice deposition near the ground and the physical properties of hydrometeors. Subject outlines provide a guide to the various aspects of the broad subject treated in each bibliography. References in each bibliography are arranged according to date of imprint. *Subject Headings:* **1. Icing of aircraft 2. Icing bibliographies 3. Bibliography on glaze and rime.**—*M.L.R.*

6B–79 551.596.1:016

†Kramer, Harris P. and Rigby, Malcolm, **Selective annotated bibliography on propagation of acoustic and explosion waves in the atmosphere.** *Meteorological Abstracts and Bibliography*, Boston, 1(10):670–686, Oct. **1950.** 112 refs. **MH-BH**—Annotated references to literature concerning anomalous propagation of sound as a method for investigating the stratosphere. The bibliography follows a chronological arrangement. An outline indicates the scope of the subject matter. *Subject Heading:* **1. Acoustical propagation bibliographies.**—*M.R.*

6B–80 551.515.4:016

†Kramer, Harris P., **Selective annotated bibliography on thunderstorms.** *Meteorological Abstracts and Bibliography*, Boston, 1(8):517–551, Aug. **1950.** 250 refs. **DLC**—An annotated bibliography of 250 references to literature dealing with the dynamics, rainfall, electricity, forecasting and distribution of thunderstorms. An Outline of Contents indicates the scope of the subject matter and the geographic areas covered. Entries are arranged chronologically. *Subject Heading:* **1. Bibliography on thunderstorms.**—*M.L.R.*

6B–81 551.515.3:016

†Kramer, Harris P., **Selective annotated bibliography on tornadoes.** *Meteorological Abstracts and Bibliography*, Boston, 2(5):307–332, May **1950.** 298 refs. **DLC**—The first section of the bibliography consists of 139 annotated references to analytical, theoretical and statistical studies on tornadoes, whirlwinds and water spouts arranged chronologically (imprints from 1841–1950). The second section contains references to occurrences of tornadoes, chiefly in the U. S. (1837–1950), and is not annotated. Subject and geographic outlines are provided. *Subject Heading:* **1. Tornado bibliographies.**—*M.L.R.*

6B–82 551.510.41:523.4:016

†Kuiper, Gerard, **Planetary and satellite atmospheres.** *Physical Society of London, Reports on Progress in Physics*, 13:247–275, **1950.** 10 plates, 2 tables, bibl. p. 273–275. **DWB**—Results of infrared spectroscopic observations of atmospheres of planets tabulated in a form which enables comparison with composition of earth's atmosphere. Several hundred references are given to the work of over a hundred authors in this field, and the literature is amply reviewed in the text. (*Same item as* 3.11–92, Nov. 1952, *MAB.*) *Subject Headings:* **1. Bibliography on planetary atmospheres 2. Progress in physics.**—*M.R.*

6B–83 551.594.11/12:016

†Parkinson, W. D. (*Carnegie Inst. of Wash., Dept. of Terrestrial Magnetism*), **Review of the literature on the ion balance of the lower atmosphere since 1939.** *I.U.G.G. Association of Terrestrial Magnetism and Electricity, IATME Bulletin*, No. 13:307–313, **1950.** table, 53 refs. **DWB**—A systematic review of over 50 papers on the subject of: the equation of small ion balance; atmospheric pollution and potential gradient; the electric effect and space charge; values of combination coefficients; nature of condensation nuclei; slow ion mobility spectrum; time and space distribution of condensation nuclei; and causes of ionization in the lower atmosphere. (*Same item as* 5.5–234, May 1954, *MAB.*) *Subject Headings:* **1. Atmospheric ion bibliographies 2. Ion balance 3. Potential gradient 4. Atmospheric pollution.**—*M.R.*

6B–84 551.574.1:551.576:016

†Perrie, D. W., **Cloud physics.** New York, John Wiley and Sons, **1950.** 119 p. 7 figs., 30 plates, 3 tables, glossary, biblio. p. 109–114. **DWB**—An excellently illustrated and readable book on many aspects of cloud forms, cloud formation and cloud physics. There is an unannotated bibliography of over 100 references. (*Same item as* 2.5–125, May 1951, *MAB.*) *Subject Heading:* **1. Cloud physics bibliographies.**—*M.R.*

6B–85 551.578.7:016

†Rice, Mary L. and Rigby, Malcolm, **Selective annotated bibliography on hail.** *Meteorological Abstracts and Bibliography*, Boston, 1(4):244 269, April **1950.** 244 refs. **DLC**—An annotated bibliography of 244 items. References are arranged chronologically under the following headings: Bibliographies, General works on hail, Hail formation theories and forecasting, Hail structure, Single cases of hailstorms, Hail distribution and frequency, Hail damage, prevention and insurance. *Subject Heading:* **1. Hail bibliographies.**—*M.L.R.*

6B–86 551.583.7(02):016

†Schwarzbach, Martin, **Das Klima der Vorzeit. Eine Einführung in die Paläoklimatologie.** [The climate of the past. An introduction to paleoclimatology.] Stuttgart, Ferdinand Enke Verlag, **1950.** 211 p. 70 figs., tables. > 850 refs. (mostly without titles). **DLC**—The extensive 11 page bibliography covers the principal literature in the field of paleoclimatology through 1948. Every possible theory is analyzed and illustrated. Present climate as well as past are considered in the light of possibilities of future changes. (*Same item as* 8–118, Aug. 1950, *MAB.*) *Subject Headings:* **1. Paleoclimatology textbooks 2. Paleoclimatology bibliographies 3. Bibliography on climatic change 4. Textbooks.**—*M.R.*

6B–87 551.5:92:012

†U. S. Weather Bureau, **Special subject bibliography (on) William Jackson Humphreys, 1862–1949.** Its *Library Circular*, 8(1):7–14, Jan. **1950.** Alphabetical by title. *Library Circular*, 8(2):6–7, Feb. **1950** lists additions and corrections to this bibliography. **DWB**—An alphabetical listing of about 250 articles and books, etc. published by W. J. HUMPHREYS between the years 1895 and 1948, in all sorts of serial publications, encyclopedias, etc. A similar chronological listing of his major works may be found in his autobiography, **Of me,** Wash., D. C., 1947. (*See* 1–33, Jan. 1950, *MAB.*) *Subject Headings:* **1. Author bibliographies 2. Bibliography of William J. Humphreys. I. Humphreys, William Jackson.**—*M.R.*

1951

6B–88 551.586:72:016

†Abbruzzese, Marie G. (*comp.*), **Climate and architecture. Selected references.** Wash., D. C., Housing and Home Finance Agency, Office of the Administrator, Division of Housing Research, March **1951.** 20 p. 175 refs. **DLC**—Contains references from various periodicals with brief annotations on relation of weather to building design, comfort, construction, heating and ventilating, microclimatology, solar heating and specific work in different states or regions of the U. S., arranged under such headings. For additional references on the relationship of climate to architecture *see* National Research Council, Wash., D. C., Building Research Advisory Board, **Weather and the building industry. A research correlation conference on climatological research and its impact on building design, construction, material and equipment, Jan. 11–12, 1950, Proceedings.** Its *BRAB Research Conference, Report*, No. 1, April **1950.** 159 p. figs., tables, bibliog. p. 154–158. (*Same item as* 2.7–176, July 1951, *MAB.*) *Subject Headings:* **1. Bibliography on architectural climatology 2. United States.**—*M.R.*

6B–89 551.5:92 551.5:012

Akademiia Nauk SSSR. Biblioteka, **Aleksandr Stepanovich Popov.** Compiled by A. M. Lukomskaia; edited by K. I. Shafranovskiĭ. Introduction by M. A. Shatelen. Moscow,

Akademiia Nauk, SSSR, **1951.** 297 p. **DLC**—A partially annotated bibliography of 904 native and foreign articles or books which refer to the work of A. S. Popov, the inventor of the first thunderstorm recorder (*see item* 4K-1, Nov. 1950, *MAB*) in 1895. The material covers the period 1883–1950. A brief biography (p. 5–36) gives a chronological account of his life, lectures and work from his birth in 1859 in the Perm district to his death on Jan. 13, 1906 in St. Petersburg. In addition to inventing the thunderstorm recorder, he was the first to make application of the radiophone to auditory detection of atmospherics, though this method was simultaneously discovered by the Italian, E. Boggia-Lera. *Subject Headings:* **1. Biography 2. Author bibliographies 3. Thunderstorm recorders 4. Bibliography of Aleksandr S. Popov. I. Popov, Aleksandr Stepanovich.**—*M.R.*

6B–90 551.511:551.543:016

†Austin, James M., **Mechanism of pressure change.** (In: **Compendium of Meteorology.** Boston, American Meteorological Society, **1951.** p. 630–638. 3 figs., table, 30 refs., 7 eqs.) **DWB**—A brief review of the more prominent theories of the pressure-change mechanism with reference to the work of Rossby, Raethjen, Wexler, etc. A bibliography of 30 items is included. (*Same item as* 3.7–1, July 1952, *MAB.*) *Subject Heading:* **1. Pressure change bibliographies.**—*M.L.R.*

6B–91 551.501:016

†Brooks, Charles Ernest Pelham, **Selective annotated bibliography on constants, units, tables and diagrams.** *Meteorological Abstracts and Bibliography*, Boston, 2(4):389–318, April **1951.** 200 refs. **MH-BH**—An annotated bibliography of 200 references arranged chronologically under the following: A. Constants, Units and General Works; B. Tables for Conversion and reduction and C. Computing Diagrams, Nomograms, Slide Rules. A detailed prefatory outline is a guide to specific subjects covered. *Subject Headings:* **1. Bibliography on aids to computation 2. Bibliography on physical constants.**—*M.L.R.*

6B–92 551.509.33:016

†Brooks, Charles Ernest Pelham, **Selective annotated bibliography on general and extended forecasting.** *Meteorological Abstracts and Bibliography*, Boston, 2(1):42–67, Jan. **1951.** 153 refs. Also his: **Selective annotated bibliography on long range forecasting.** *Ibid.*, 2(2):124–157, Feb. 1951. 225 refs. **MH-BH**—The two bibliographies contain a total of 378 annotated references. Sec. I of the first bibliography is devoted to general works on methods of forecasting for periods exceeding two days; Sec. II contains works dealing with periods from three days to less than a month. The second bibliography deals with periods from one month upwards. The subject outlines prefacing each bibliography indicate the various bases and methods or schools of thought represented and the types of phenomena forecast. The continents or regions involved are listed in the geographical outlines. Items are arranged chronologically. *Subject Headings:* **1. Extended forecasting bibliographies 2. Long range forecasting bibliographies.**—*C.E.P.B.*

6B–93 551.5:551.43:016

†Brooks, Charles Ernest Pelham, **Selective annotated bibliography on mountain meteorology.** *Meteorological Abstracts and Bibliography*, Boston, 2(11):916–959, Nov. **1951.** 267 refs. **MH-BH**—The physical, rather than the physiological, factors are emphasized in this annotated bibliography of 267 references dealing with various aspects of mountain meteorology. A detailed subject outline indicates that papers deal with (a) the effects of elevation on meteorological elements and (b) effects of mountain conditions on observations, instruments and observatories. A geographic outline indicates the areas covered by the bibliography. The arrangement is chronological. *Subject Heading:* **1. Bibliography on mountain meteorology.**—*M.L.R.*

6B–94 551.5:06:016

†**Compendium of Meteorology,** ed. by Thomas F. Malone. Prepared under the direction of the Committee on the Compendium of Meteorology: H. R. Byers, H. E. Landsberg, H. Wexler, B. Haurwitz, A. F. Spilhaus, H. S. Willett, H. G. Houghton (*chairman*). Boston. American Meteorological Society, **1951.** 1334 p. charts, graphs, tables, refs. and bibliogs. Price: $12.00. **DWB**—The Compendium of meteorology provides a detailed survey of 25 broad subjects (*see* 3.3–1, March 1952, *MAB*). Forty of the 108 articles, containing extensive bibliographies and previously abstracted in **Meteorological Abstracts,** are listed here:

Israel, H., Atm. electr. instr., 152 refs. (4.2–10)
Court, A., Antarctic met., 140 refs. (4.3–2)
Chapman, S., Atm. tides, 112 refs. (3.5–213)
Mitra, S. K., Upper atm. physics, 108 refs. (4.5–10)
Landsberg, H. E. and Jacobs, W. C., Appl. climat., 107 refs. (3.9–10)
Hewson, E. W., Atm. pollution, 106 refs. (4.2–9)
Götz, F. W. P., Ozone in atm., 104 refs. (4.2–5)
Brooks, C. F., Clouds in forecasting, 102 refs. (4.1–2)
Whipple, F. L., Meteors as probes, 95 refs. (4.1–15)
Fultz, D., General circ. models, 95 refs. (4.4–6)

Buettner, K. J. K., Physical bioclim., 84 refs. (3.9–4)
Bundgaard, R. C., Short range forecstg., 83 refs. (3.6–3)
Sutton, O. G., Atm. turbulence and diffusion, 80 refs. (3.5–12)
Fritz, S., Solar radiation, 79 refs. (3.11–2)
Defant, F., Local winds, 75 refs. (3.7–3)
Palmer, C. E., Tropical met., 73 refs. (3.10–12)
Ligda, M. C., Radar storm obs., 71 refs. (3.10–10)
Sekera, Z., Atm. polarization, 70 refs. (4.1–9)
Hare, F. R., Arctic climat., 69 refs. (3.10–9)
Palmén, E., Aerol. of cyclones, 64 refs. (3.5–8)
Israel, H., Atm. radioactivity, 63 refs. (4.2–11)
Craig, R. A., Ozone and radiative equil., 63 refs. (4.9–3)
Namias, J. and Clapp, P. F., General circulation, 61 refs. (3.5–6)
Cauer, H., Atm. chem., 60 refs. (4.5–2)
Neuberger, H., Atm. optics, 59 refs. (4.1–6)
Dunn, G. E., Short range forecasting, 59 refs. (3.6–5)
Houghton, H. G., Cloud physics, 58 refs. (3.11–4)
Wait, G. R. and Parkinson, W. D., Ions in atm., 58 refs. (4.1–14)
Middleton, W. E. K., Visibility, 57 refs. (3I–275)
Bemis, A. C., Aircraft met. instr., 56 refs. (4.3–1)
Möller, F., Long wave radiation, 51 refs. (3.11–6)
Byers, H. R., Thunderstorms, 49 refs. (3.5–4)
Junge, C., Cond. nuclei, 48 refs. (4.3–10)
Möller, F., Cloud thermodynamics, 47 refs. (4.4–11)
Van Mieghem, J. M., Hydrodynamic instability, 46 refs. (3.8–11)
Riehl, H., Tropical cyclone theory, 44 refs. (4.2–13)
Schaefer, V. J., Snow and experim. meteorology, 43 refs. (4.1–7)
Jacobs, W. C., Energy exchange over oceans, 41 refs. (4.1–5)
Wanta, R. C., Sferics, 41 refs. (4.5–13)
Jacobs, W. C., Aerobiology, 40 refs. (3.9–9)

Other papers with less extensive bibliographies are: Gunn, R., Precip. electr.; Chapman, S., Photochemical processes; Newell, H. E., Jr., Upper atm. pressure and temp.; Gutenberg, B., Acoustical propagation; Bjerknes, J., Cyclone theory; Wexler, H., Anticyclones; Austin, J. M., Pressure change; and Panofsky, H. A., Vertical motions. All references have been carefully checked and edited. (*Same item as* 3.3–1 and 6A–140, March 1952 and Jan. 1955, *MAB.*) *Subject Headings:* **1. Subject bibliographies 2. Bibliography on meteorology.**—*M.R.*

6B–95 551.594.7:016:535.2

†Cornell University. School of Electrical Engineering, **Bibliography of reports on tropospheric propagation.** Contract AF 33(038)-1091, Final Report, Part 1, April 1, **1951.** Each section renumbered. **DLC**—A thoroughly annotated bibliography of 867 reports on 17 phases of troposphere radio propagation from numerous American, British, Australian, Canadian and New Zealand sources from 1940 to 1949. The only sources other than those from the English language that have been abstracted are those which have been translated by such agencies as CADO and NACA. The abstracts are thorough and contain essential information and theory. A detailed subject and author index is provided. The meteorological theory and instrumentation, effect of temperature and humidity inversions, hills, trees, storms, polarization, etc. are all given proper emphasis. The term "Radio climatology" is introduced here. (*Same item as* 4.7–226, July 1953, *MAB.*) *Subject Headings:* **1. Tropospheric propagation bibliographies 2. Radio propagation 3. Radio climatology.** —*M.R.*

6B–96 551.586:599.9:016(95)

†Dordick, Isadore L., **Climate and human welfare in Australian New Guinea.** Thesis (Ph.D)—Johns Hopkins University, **1951.** 460 p. 52 figs., 74 tables, 155 refs. Typescript. The literature on the climatology of New Guinea, and on the biological aspects of climatic adaptation in tropical regions is reviewed exhaustively and carefully cited in this thesis. A condensation appears in *Acta Tropica,* Basel, 10(3):233–250, **1953.** (*Same item as* 3.4–238, April 1952, *MAB.*) *Subject Headings:* **1. Bioclimatology 2. Human climatology 3. Climatic amelioration 4. Bibliography on the climate of New Guinea 5. New Guinea.**—*M.R.*

6B–97 551.594.7:016

†Germany. Deutscher Wetterdienst in der US-Zone. Wetterdienstbibliothek, **Literatur-Ausstellung über Fragen auf dem Gebiet der Ausbreitung elektrischer Wellen vom Standpunkt der Meteorologie aus.** [Presentation of literature on problems in the field of electrical wave propagation from a meteorological point of view.] [**1951?**] 3 p. Mimeo. **DWB**—Four brief bibliographies are included, covering the following subjects applicable to the general subject of electromagnetic propagation: 1) The influence of the atmosphere on electric waves (17 items); 2) Thunderstorms (13 items); 3) Temperature and humidity in the lowest kilometer of the atmosphere (16 items); and 4) Pertinent German works on various fields of meteorology and forestry (10 items). (*Same item as* 4.4–277, April 1953, *MAB.*) *Subject Headings:* **1. Tropospheric propagation bibliographies 2. Electromagnetic waves 3. Germany.**—*M.R.*

6B–98 551.510.535:551.524.7:016

†Gerson, N. C., **A critical survey of ionospheric temperatures.** *Physical Society of London, Reports on Progress in Physics*, 14:316–365, **1951.** 18 figs., 10 tables, 142 refs., 116 eqs. **DLC**—A survey of methods of inferring the temperature of the atmosphere using basic ionospheric equations. Probable mean annual temperatures in middle latitudes given by collisional frequencies; auroral scale heights and electron concentration are tabulated showing an increase from 219–300°K at 100 km to a maximum of around 3450°K at 400 km. It is tentatively considered that there are no large diurnal temperature variations. The references, referred to in text, are arranged alphabetically. (*Same item as* 3.4–100, April 1952, *MAB.*) *Subject Headings:* **1. Upper air temperatures 2. Ionosphere 3. Ionosphere temperature bibliographies.**—*C.E.P.B.*

6B–99 551.515.4:551.509.5(02) 551.515.3

†Kolobkov, N. V., **Grozy i shkavaly.** [Thunderstorms and squalls.] Moscow, Gos. Izdat., **1951.** [2nd ed.] 355 p. 148 figs., 31 tables, 155 refs. **DLC**—The first full edition of this book which appeared in 1940 (*see items* E–75 and H–83, May and Aug. 1950, *MAB*) was the most complete scientific work on thunderstorms and tornadoes to date. The present edition contains numerous additions and revisions both in text (and illustrations) and bibliography up to 1951. The bibliography is very complete, containing 123 references to Soviet literature and 33 to Western treatises. (*Same item as* 5.8–4, Aug. 1954, *MAB.*) *Subject Headings:* **1. Bibliography on thunderstorms 2. Tornadoes 3. U.S.S.R.**—*M.R.*

6B–100 551.576.11:629.43:016

†Kramer, Mollie P., **Annotated bibliography on condensation trails behind aircraft.** *Meteorological Abstracts and Bibliography*, Boston, 2(9):765–782, Sept. **1951.** 133 refs. **MH-BH**—This bibliography of 133 annotated references presents a fairly exhaustive list of papers published on the subject between 1917 and 1951. The subject outline indicates inclusion of material on exhaust trails, aerodynamic or adiabatic trails and negative condensation trails. Items are arranged chronologically. *Subject Heading:* **1. Condensation trail bibliographies.**—*M.P.K.*

6B–101 551.586:599.9:016

†Mitchell, Harold H. and Edman, Marjorie, **Nutrition and climatic stress with particular reference to man.** Springfield, Ill., Charles C Thomas, **1951.** 234 p. tables, photos, 60 page bibliog. **DLC**—The work covers a review of the pertinent literature on the physiological effects of cold. A comprehensive bibliography is included. (*Same item as* 4.8–14, Aug. 1953, *MAB.*) *Subject Headings:* **1. Bioclimatology bibliographies 2. Climatic stress 3. Dietetic influences.**—*M.R.*

6B–102 551.508.8:621.396.826:016

†Nupen, Wilhelm, **Selective annotated bibliography on radar as applied to meteorology.** *Meteorological Abstracts and Bibliography*, Boston, 2(8):680–711, Aug. **1951.** 232 refs. **MH-BH**—A bibliography of 232 annotated references to material on the application of radar or microwave equipment to observation of meteorological elements. The entries are arranged in chronological order and in alphabetical order by author within each year. An outline of contents furnishes a detailed guide to the scope of the material included. *Subject Heading:* **1. Bibliography on radar meteorology.**—*M.L.R.*

6B–103 551.510.535:551.594.7:016

†Pennsylvania. State College. Ionosphere Research Laboratory, **Survey of the literature of the ionosphere pertaining to long waves.** Contract AF 19(122)-44, Basic Ionospheric Research, Technical Report, No. 23, July 10, **1951.** 268 p. **DWB**—This bibliography is comprised of abstracts and references to the literature of the ionosphere and a portion of the upper atmosphere. Attention has been largely confined to the published work concerning long waves and the levels in height where the upper atmospheric physical characteristics affect the passage of such waves. The report is divided into three sections. In the first section abstracts and reference material concerning all relevant and available papers published prior to Jan. 1, 1950 are included. The second section comprises a topic listing of the work of section one for reference purposes. Reference material, without abstracts, of similar work published during 1950–1951 is included as section three. While, as mentioned above, the emphasis has been placed on long wave and associated literature, many survey papers and some of historical interest are included. Similarly, relevant work in physics and mathematics are considered. *Subject Headings:* **1. Ionosphere bibliographies 2. Long wave transmission 3. Radio wave propagation.**—*Author's abstract.*

6B–104 551.510.41:535.33(02)

†Prokof'eva, I. A., **Atmosfernyĭ ozon.** [Atmospheric ozone.] Moscow, Akademiia Nauk, **1951.** 231 p. graphs, charts, diagrs., tables, 213 refs. Price: 11 rubles, 50 kop. **DLC**—A sys-

tematically organized and technical monograph covering every aspect of: a) instrumentation, b) computation and c) interpretation of data on ozone in the atmosphere, based on work of Russian and foreign scientists from 1879 to 1950. The bibliography of 213 items (of which 58 are in Russian) covers most of the important literature up to 1949. (*Same item as* 3.4–9, April 1952, *MAB.*) *Subject Headings:* **1. Ozone 2. Bibliography on ozone 3. Textbooks.**—*M.R.*

6B–105 551.553:016

†Stepanova, Nina A., **Selective annotated bibliography on special winds.** *Meteorological Abstracts and Bibliography*, Boston, 2(7):586–629, July 1951. 311 refs. **MH-BH**—The bulk of the 311 annotated references are to theoretical studies or descriptions of typical characteristics of special winds. A subject outline indicates the special winds included and the geographic outline indicates their place of occurrence. A chronological arrangement (imprints from 1801–1950) is followed. *Subject Heading:* **1. Bibliography on special winds.**—*M.L.R.*

6B–106 551.547.1:551.509.312:016

†Stephens, F. Briscoe; Moyer, Vance; Taylor, Charles L. and Jones, David L., **Summary and evaluation of the various existing methods and techniques employed in forecasting the heights of constant pressure surfaces.** Pennsylvania. State College. Mineral Industries Experiment Station, Contract N189s-80323, Final Report, Dec. 31, 1951. 28 figs., 5 tables, 344 refs. 2 v. v. 1, Text; v. 2, Bibliography and Abstracts. **DLC**—Over 300 articles which are in one way or another pertinent to the subject of forecasting the heights of constant pressure surfaces, or the analysis which precedes the forecasting, were abstracted—some at great length. These are arranged in a random order, but an alphabetical bibliography arranged by author (title and reference only) serves as an author index. The various "schools" represented in the bibliography are evaluated and discussed. Conclusion is that no one method is completely objective or can be recommended over other methods. The subjects are: choice of levels, forecast period, diurnal changes in height of constant pressure surfaces (over North America), convergence and vertical motion, long and short waves, vorticity theory and trajectories (ROSSBY, FLUTZ, BORTMAN, WOBUS, NAMIAS and CLAPP), thickness based on advection, Charney-Eliassen forecasting by numerical methods, etc. The empirical rules derived from each of the above are summarized at the end of each chapter and charts, graphs, references, etc. amply included. The role of experience is constantly emphasized in the text. (*Same item as* 5F–46, June 1954; 5.7–12, July 1954, *MAB.*) *Subject Headings:* **1. Constant pressure surface forecasts 2. Synoptic analysis 3. Forecasting bibliographies. I. Project AROWA (TED-UNL-MA 501).**—*M.R.*

6B–107 551.5:016

†U. S. Library of Congress, **East European Accessions,** v. 1, 1951–. Latest issue seen, 3(11), Nov. 1954. Monthly. Price: $7.00 yearly from U. S. Govt. Print. Off., Wash. 25, D. C. Monographs issued from 1944– and Periodical publications from 1950– arranged according to the 10 countries covered, monographs and periodicals alphabetized separately, under each of 17 subject groups. Original language (or transliteration) and translation into English. Contents (in English) for certain periodical titles. Subject index comprises more than half each issue. Accumulative list of East European periodicals currently received in the Library of Congress (and cooperative libraries) included in June and Dec. issues. **DLC**—A few items of interest to meteorologists will be found each month under the subject headings such as Climate, Clouds, Meteorology, Rainfall or related subjects. The references are to journals or monographs which are analyzed or listed under the respective countries (Albania, Bulgaria, Czechoslovakia, Estonia, Hungary, Latvia, Lithuania, Poland, Rumania and Yugoslavia) and by subject area in each country (12 is Geography and Geology, 13 Science). Most of the material listed will be found in the Slavic Division of the Library of Congress. *Subject Headings:* **1. East European accessions 2. Subject indexes 3. Central Europe.**—*M.R.*

6B–108 551.5:629.13:019.941

U. S. National Advisory Committee for Aeronautics, **Research Abstracts,** No. 1, June 15, 1951. Latest issue seen, No. 76, Jan. 1955. About 8 p. per issue. Irregular (1 to 2 issues per month.) Abstracts NACA publications (**Technical Notes; Reports; Research Memorandums; Technical Memorandums**); declassified NACA publications; unpublished papers from various sources; and miscellaneous. Later issues devote considerable space to British publications. Abstracts listed in accession order of abstracting. Documents abstracted are available (some on loan only) from NACA, 1724 F Street, N.W., Wash. 25, D. C. **DLC** (Aeronautics Div.)—A dozen or more of these reports per year) are on atmospheric oscillations, turbulence, gusts, ice formation, meteorological instruments, lightning hazards and engineering problems affected by meteorological conditions. They are indexed under 6, 6.1 and 6.2, 7.6 and 8.3 in the NACA Cumulative Indexes. (*See* 6A–60, Jan. 1955, *MAB.*) *Subject Headings:* **1. Aeronautical meteorology abstracts 2. Turbulence abstracts.**—*M.R.*

6B–109 551.510.53:61:016

†U. S. School of Aviation Medicine, Randolph Field, Texas, **Physics and medicine of the upper atmosphere: a study of the aeropause.** The Proceedings of a symposium on the physics and medicine of the upper atmosphere held at San Antonio, Texas, Nov. 6–9, **1951.** Editors: Clayton S. White and Otis O. Benson, Jr. Albuquerque, University of New Mexico Press, 1952. 611 p. 150 figs., tables, 46 plates, refs. at end of most chapters. Price: $10.00. **DLC**—The contents of this volume constitute a survey of existing unclassified information essential to a background for planning research on manned flight toward the top of the atmosphere, namely, the aeropause. The individual articles are illustrated and provided with bibliographies (790 refs.). (*Same item as* 3.11–11, Nov. 1952, *MAB.*) *Subject Headings:* **1. Aeropause 2. Medical meteorology 3. Upper atmosphere research bibliographies. I. White, Clayton S.** (*ed.*) **II. Benson, Otis O., Jr.** (*ed.*) **III. Lovelace Foundation for Medical Education and Research, Albuquerque, N. M.**—*I.L.D.*

6B–110 551.508.71:016

†Wexler, Arnold and Brombacher, W. G., **Methods of measuring humidity and testing hygrometers.** *U. S. National Bureau of Standards, Circular,* No. 512, Sept. 28, **1951.** 18 p. 6 tables, 3 figs., 157 refs. **DLC**—A review of methods for the measurement of the water-vapor content of air and other gases and for the production and control of atmospheres of known humidity for hygrometer testing and calibration and for general research. Among the hygrometric techniques discussed are psychrometry, mechanical hygrometry, dew point measurement, electric hygrometry, gravimetric hygrometry, thermal conductivity, index of refraction, pressure and volume measurements, and dielectric constant. Descriptions are given of suitable equipment for establishing desired humidities over a wide range of temperature. A list of 157 selected references pertaining to hygrometry is included. (*Same item as* 3.5–32, May 1952, *MAB.*) *Subject Headings:* **1. Hygrometry 2. Hygrometry bibliographies.**—*Authors' abstract.*

6B–111 551.525:016 551.524.37:016

†Zikeev, N. T., **A selective annotated bibliography on soil temperature.** *Meteorological Abstracts and Bibliography,* Boston, 2(3):207–232, March **1951.** 194 refs. Also his: **Selective annotated bibliography on frost and frost forecasting.** *Ibid.,* 4(3):337–397, March **1953.** 358 refs. And his: **Annotated bibliography on dew.** *Ibid.,* 3(4): 360–391, April **1952.** 208 refs. **MH-BH**—The first bibliography presents a geographical and historical survey of the progress in research and measurement of soil temperature from a meteorological or agricultural point of view as indicated in the subject outline. The 194 items are arranged chronologically and carry brief annotations. The second bibliography contains 358 annotated references which provide a representative sample of available material from all parts of the world on frost and frost forecasting. Subject and geographic outlines are provided. The third contains over 200 references dealing with physical processes, regional and other aspects of dew. *Subject Headings:* **1. Soil temperature bibliographies 2. Bibliography on frost and frost forecasting 3. Dew bibliographies.**—*M.L.R.*

1952

6B–112 550.3:016

†**Advances in Geophysics.** v. 1. New York, Academic Press, **1952.** Helmut E. Landsberg (*ed.*). 362 p. figs., tables, refs. Editorial advisory committee, Bernhard Haurwitz, Walter D. Lambert, James B. Macelwane and Roger Revelle. **DLC**—The volume consists of eight articles entitled: Automatic processing of geophysical data, Some new statistical techniques in geophysics, Studies of the general circulation of the atmosphere, Exploration of the upper atmosphere by meteoritic techniques, Unsolved problems in physics of the high atmosphere, Estuarine hydrography, The earth's gravitational field and its exploitation and Aeromagnetic surveying. Each article contains an extensive bibliography. (*Same item as* 4.4–10, April 1953, *MAB.*) *Subject Headings:* **1. Advances in geophysics 2. Bibliography on geophysics.**—*M.R.*

6B–113 551.594.12:523.7

†Bhatnagar, P. L.; Krook, Max and Menzel, Donald H., **Dynamics of ionized media, preliminary report.** Harvard University. Harvard College Observatory. Solar Dept. Contract AF 19(604)-146, Scientific Report, No. 3, July 15, **1952.** 56 p. 55 eqs., 94 refs. **DWB**—This report consists of a brief review of recent work in the dynamical theory of ionized gases. The accent is placed on general principles and methods rather than on specific details and applications. The best model available at the present time describes the medium-like behavior of a system of charged particles in terms of three idealized mechanisms: close binary collisions, the statistically-determined result of distant collisions, and the action of an internal electromagnetic field. The literature on the generation of magnetic fields is reported on briefly. The importance of shock waves in such non-stationary problems is stressed. The report concludes with a section on magnetostatic solutions of the equations of Magnetohydrodynamics. *Subject Headings:* **1. Ionization bibliographies 2. Astrophysics.**—*From authors' abstract.*

6B–114 551.573:016

†Blue Hill Meteorological Observatory. Library. **Bibliography of evaporation.** April **1952.** 8 p. Typewritten. 97 refs. **MH-BH**—Contains mostly references from the 1930's with a few earlier and later ones, listed in alphabetical order by author. References are in English, German, French and Dutch with no annotations. (*Same item as* K–209, Nov. 1950, *M.A.B.*) *Subject Heading:* **1. Evaporation bibliographies.**—*H.P.K.*

6B–115 551.575/6:016

†Bristow, Gerald C., **Annotated bibliography on stratus forecasting.** *Meteorological Abstracts and Bibliography*, Boston, 3(6):573–596, June **1952.** 137 refs. **MH-BH**—Fairly complete bibliography of 137 annotated references to stratus, particularly California stratus, and its forecasting. Subject and geographic outlines are provided. *Subject Heading:* **1. Bibliography on stratus forecasting.**—*M.R.*

6B–116 551.588.7:016

†Brooks, Charles Ernest Pelham, **Selective annotated bibliography on urban climates.** *Meteorological Abstracts and Bibliography*, Boston, 3(7):734–773, July **1952.** 249 refs. **MH-BH**—An annotated bibliography of 249 references to literature containing a) data on climates of towns and cities, and dealing with b) the effect of towns on meteorological elements and phenomena, c) the effect of climatic factors on town planning and architecture and d) the effects of urban conditions on health. An outline indicates the detailed aspects of the subject covered in the bibliography. References are arranged chronologically (earliest imprint, 1933). *Subject Heading:* **1. Urban climatology bibliographies.**—*M.L.R.*

6B–117 551.509.59:551.551:533.15:016

Davidson, Ben, **Forecasting diffusion in the lower layers of the atmosphere.** *U. S. Air Force, Cambridge Research Center, Air Force Surveys in Geophysics*, No. 14, Sept. **1952.** 192 p. 103 figs., 23 tables, 43 refs., 38 eqs. sources of illus., p. 189–192. **DWB**—At the end of a survey on the actual forecasting in the field of meteorological conditions affecting diffusion in the surface layers of the atmosphere, there are listed over 40 references to the most important literature sources in this field. Forecasting over rough as well as ideal terrain, and under forest, sea-coast, mountain-valley, and elevated source (high stacks) is considered. *Subject Headings:* **1. Turbulent diffusion forecasting 2. Turbulent diffusion forecasting bibliographies.**—*M.R.*

6B–118 551.578.11:016

Eriksson, Erik (*Royal Agri. Col. of Sweden, Uppsala*), **Composition of atmospheric precipitation, Pt. I.** *Tellus*, 4(3):215–232, Aug. **1952. Pt. II,** *Ibid.*, 4(4):280–303, Nov. **1952.** figs., tables. Contents: Pt. I, Nitrogen compounds. Pt. II, Sulfur, chloride, iodine compounds. Bibliography. **MH-BH**—The list of references in Pt. II covers exhaustively the available literature on nitrogen, sulfur, chloride and iodine compounds in precipitation, including methodology, content of saline nuclei in clouds, dew, snow and air, and geographical and continental influences. (Pt. I *same item as* 4.7–155, July 1953; Pt. II, *same item as* 5.1–103, Jan. 1954, *M.A.B.*) *Subject Headings:* **1. Precipitation composition bibliographies 2. Bibliography on atmospheric chemistry.**—*M.R.*

6B–119 551.510.53:016

†Gerson, N. C. (*U. S. Air Force, Cambridge Res. Center*), **Unsolved problems in physics of the high atmosphere.** *Advances in Geophysics*, New York, 1:155–242, **1952.** 12 figs., 10 tables, 177 refs. **DLC**—The various subdivisions of the atmosphere (troposphere, stratosphere, chemosphere, ionosphere, mesosphere and exosphere) are defined and discussed. Chemical composition of the atmosphere is discussed and given in tables of the normal chemical constituents, the isotopes, ionization and dissociation potentials of molecules, and probable constituents of ionosphere and chemosphere, and origin thereof. Also tabulated are temperature, pressure number, density, mean free path and kinematic viscosity at altitudes from 0–800 km in mid-latitudes and two seasons. The ionosphere, emissions (air flow and aurora) and spectra thereof, new techniques for estimating ionospheric winds from cloud (noctilucent, luminous, airglow and sporadic E clouds) movements. States properties and processes such as temperature and its determination by various means, composition as determined from emission spectra and absorption spectra, photochemical equilibrium, collisional phenomena, ionospheric tides and other oscillations, diffusion in magnetic and electric fields and, finally, a summary of unsolved problems which are being or should be worked on. A very extensive bibliography (177 items) on all aspects of high atmospheric physics is appended. (*Same item as* 4.8–10, Aug. 1953, *M.A.B.*) *Subject Headings:* **1. Upper atmosphere physics bibliographies 2. Atmospheric structure 3. Atmospheric composition 4. Review articles 5. Advances in geophysics.**—*M.R.*

6B–120 551.578.11:016:019.941

†Great Britain. Dept. of Scientific and Industrial Research. Fuel Research, **The composition of rain water bibliography.** East Greenwich, Fuel Research Station, **1952.** 7 p. Typescript. **GB-MO**—Abstracts are given of 33 papers issued between 1924 and 1947 in various parts of the world (all titles in English), including notes of the amounts and composition of dissolved impurities, methods of measurement, etc. (*Same item as* 4.2–209, Feb. 1953, *MAB.*) *Subject Heading:* **1. Rain composition bibliographies.**—*C.E.P.B.*

6B–121 551.510.42:551.590.25:016

†Hoffleit, Ellen Dorit, **Bibliography on meteoritic dust with brief abstracts, including compilation by the late Willard J. Fisher.** Harvard Univ. Harvard College Observatory, Contract NOrd 10449, Task I and Contract N5ori-07647, Technical Report, No. 9, **1952.** 45 p. 505 refs. Also issued as its *Harvard Reprints*, v. 2, No. 43. **DWB**—This annotated bibliography contains 505 references to articles on meteoric dust in its historical, observational, theoretical and instrumental aspects (including some related material on auroras, noctilucent clouds, etc.) all arranged alphabetically by senior author. The basis of the bibliography was a card catalog of 125 abstracts on meteoric dust prepared by WILLARD J. FISHER before his death in 1934. This material was extended by searching a number of standard journals or bibliographic sources, mostly astronomical. Not all of the items were checked against the original. *Subject Headings:* **1. Meteoric dust bibliographies. I. Fisher, Willard J. II. Whipple, F. L.**—*M.R.*

6B–122 551.557:551.513:016

†Jenkins, C. F., **A survey of available information on winds above 30,000 feet.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 24, Dec. **1952.** 35 p. 3 figs., table, 59 refs. **DWB**—A valuable annotated review of 59 published references to winds up to 400,000 ft. (*Same item as* 4F–103, June, 1953, *MAB.*) *Subject Heading:* **1. Stratospheric winds bibliographies.**—*A.A.*

6B–123 551.543:612.27:016

†Kenk, Roman and Nall, Mabel Lexton (*Library of Congress*), **Physiology of the circulation of the brain: an annotated bibliography, 1938-1948.** *Physiological Reviews*, v. 32, Supplement, No. 1, July **1952.** 437 p. **DLC**—In this remarkable systematic and well indexed bibliography will be found at least 50 annotated references to literature on the effect of atmospheric pressure on the functioning of the brain, and several more under the headings Environmental Temperature, Hypoxemia, etc. *Subject Headings:* **1. Physiological meteorology 2. Atmospheric pressure effects on brain 3. Bibliography on brain physiology.**—*M.R.*

6B–124 551.509.33:016

†Kramer, Mollie P., **Annotated bibliography on objective forecasting.** *Meteorological Abstracts and Bibliography*, Boston, 3(5):471-517, May **1952.** 245 refs. **MH-BH**—A comprehensive annotated bibliography of 245 references arranged chronologically (imprints 1885-1952). A detailed subject outline groups all articles according to the element forecast and the variables employed to arrive at the desired forecast. A geographical outline is also included. *Subject Heading:* **1. Bibliography on objective forecasting.**—*M.L.R.*

6B–125 551.551:016

†Kramer, Mollie P. and Rigby, Malcolm, **Selective annotated bibliography on atmospheric turbulence and "bumpiness" in flight.** *Meteorological Abstracts and Bibliography*, Boston, 3(11): 1185-1219, Nov. **1952.** 213 refs. Also: Rigby, Malcolm; Kramer, Mollie P. and Assur, Andrew, **Selective annotated bibliography on the theory of turbulence.** *Ibid.*, 4(1):61-98, Jan. **1953.** 205 refs. and Kramer, Mollie P.; Assur, Andrew and Rigby, Malcolm, **Selective annotated bibliography on turbulent diffusion and micrometeorological turbulence.** *Ibid.*, 4(2):186-249, Feb. **1953.** 342 refs. **MH-BH**—The bibliographies comprise a total of 760 annotated references to papers on high level clear air turbulence, statistical theory of turbulence, micrometeorological turbulence, turbulent diffusion and turbulent exchange. A chronological arrangement is followed. Detailed prefatory outlines, indicating various aspects of the subjects treated, precede each bibliography. *Subject Headings:* **1. Turbulence bibliographies 2. Turbulent diffusion.**—*M.L.R.*

6B–126 55:012

Landsberg, Helmut, **Publications by H. Landsberg.** [1952] 19 p. Mimeo. 2d ed., **1954.** 29 p. 166 refs. **DWB**—A tabular listing of 166 articles, books and other works in the fields of meteorology, seismology, climatology, bioclimatology, geodesy, mining, education, physics, necrology, general geophysics and history of science written or published by Dr. Landsberg between 1930 and 1953. The title, translated title (earlier works), place and organ of publication, date and

general field of interest are tabulated. The bibliography reveals an extremely wide range of interest and of outlets for publication—in Germany between 1930 and 1938, and in the United States from 1934–1953. *Subject Headings:* **1. Author bibliographies 2. Bibliography of Helmut Landsberg 3. Geophysics 4. Landsberg, Helmut.**—*M.R.*

6B–127 551.591:016

†Middleton, William E. K., **Vision through the atmosphere.** Toronto, Univ. of Toronto Press, **1952.** 250 p. numerous figs., tables, 420 refs. (p. 231–246), eqs. **DWB**—MIDDLETON'S earlier book, **Visibility in meteorology** (2nd ed., 1941, *see* 3I–88, Sept. 1952, *MAB*) contained about 350 unannotated but carefully checked references to articles on all aspects of physical, optical, observations and instrumental visibility measurement. The new and completely revised edition cited above contains 420 references to articles on theoretical aspects of physical and physiological as well as instrumental visibility problems, neglecting the climatological and synoptic relationships which played an important role in the earlier text. (*Same item as* 4.4–11, April 1953, *MAB.*) *Subject Heading:* **1. Bibliography on visibility.**—*M.R.*

6B–128 551.510.5(02):016

†Mitra, Sisir K., **The upper atmosphere.** 2nd ed. Calcutta, The Asiatic Society, [preface 1952]. 713 p. figs., tables, bibliog. p. 644–668, eqs. **DLC, MH-BH**—The purpose of the book, as stated in the first edition (*see item* 1–57, Jan. 1950, *MAB*) is to give, "in a connected form, an account of the present state of our knowledge of the upper atmosphere as has been obtained so far by direct and indirect observations." The volume contains 13 chapters and an appendix and the bibliography of 887 items is arranged in that order. Author, source and imprint are given, but *no* titles. (*Same item as* 4.8–15, Aug. 1953, *MAB.*) *Subject Headings:* **1. Upper atmosphere physics bibliography 2. Textbooks.**—*M.L.R.*

6B–129 551.5:92:012

†Morelli, Carlo, **In memoria di Francesco Vercelli.** *Trieste. Osservatorio Geofisico, Pubblicazioni, Nuova Serie,* No. **24, 1952.** 14 p. Bibliography of Vercelli's works, p. 12–14. port. **DWB**—He was born in Vinchio d'Asti Oct. 22, 1883 and died Oct. 24, 1952; was graduated in Physics and in Mathematics at the Univ. of Torino in 1908 and 1909, respectively. He received the appointment of the docent of Geophysics in 1915, confirmed in 1929. Beginning in 1909 with papers on seiches and continuing with studies of the temperature of lakes, caves, the interior of the earth, geysers, etc. (1911–1914), he took up the study of atmospheric tides, and in the first World War the effect of the atmosphere on artillery fire. After the war he continued studies in all branches of geophysics, oceanography, hydrography, climatology, limnology, periodicities, etc.; held chairs at the Univ. of Milan, Pauda and Trieste, and was director of the Seismic and later the Oceanographic Institute of Trieste (1931–1952). He published 127 papers which are listed. His periodic analysis machine is described in detail and illustrated. His other major works were on the radiation balance of a lake, on atmosphere and ocean tides, on dendrochronology, climatic changes, etc. His greatest publication was **L'Aria,** the 2nd ed. of which was published in 1952 (*see item* 4.8–16, Aug. 1953, *MAB*). At the time of his death VERCELLI was director of the Geophysical Observatory of Trieste, which he had developed. *Subject Headings:* **1. Bibliography of Francesco Vercelli 2. Biography 3. Author bibliographies. I. Vercelli, Francesco.**—*M.R.*

6B–130 551.571:699.87:016

†National Research Council, Wash., D. C. Building Research Advisory Board, **Condensation control in buildings as related to paints, papers and insulating materials, Feb. 26–27, 1952.** Its *Research Conference Report,* No. 4, Sept. **1952.** 118 p. illus., 86 refs. **DWB**—Panel discussions and papers covered the technological problems presented by condensation in residential buildings, with reference to building materials for construction, paints and paint films, building papers; the relationship of climate to condensation; and means for coping with condensation. Extensive bibliography on condensation in buildings is given. (*Same item as* 4.9–151, Sept. 1953, *MAB.*) *Subject Headings:* **1. Condensation control 2. Bibliography on condensation control.**—*I.L.D.*

6B–131 551.508.4:551.551:016

†Romano, J. E. and Kivnick, Arnold (*Illinois Univ.*), **Bibliography on hot-wire anemometry.** Prepared for issue in conjunction with Illinois. University, Contract N6-ori-71, Task Order No. XI, Quarterly Status Report, No. 23 **Mixing of Fluid Streams,** [1952?] 5 p. 65 refs. **DLC**—An annotated bibliography of 65 references in English, German and French. (*Same item as* 4A–190, Jan. 1953, *MAB.*) *Subject Heading:* **1. Bibliography on hot wire anemometry.**—*M.P.K.*

6B–132 551.578.7:629.135:016

†Souter, Robert K. and Emerson, Joseph B. (*Langley Aero. Lab., Langley Field, Va.*), **Summary of available hail literature and the effect of hail on aircraft in flight.** *U. S. NACA, Technical Note,*

2734, Sept. **1952.** 162 p. 30 figs., 6 tables, bibliog. p. 93-162 (552 items). **DWB**—Available information on hail phenomenon affecting aircraft in flight has been examined. This paper attempts to coordinate the present knowledge of hail with the effect of hail on aircraft in flight and includes (1) a digest of the literature on the physical properties, the occurrence, and the formation of hail; (2) a survey of hail effect on aircraft in flight from analyses of 57 cases of airplanes damaged by hail; (3) a résumé of hail information for the benefit of pilots, forecasters and ground operational personnel; and (4) a hail bibliography of 552 articles for use of research personnel. The bibliography is arranged according to seven general classes and chronologically within each class. Many items are annotated. (*Same item as* 4.1-12, Jan. 1953, *MAB.*) *Subject Headings:* **1. Hail bibliographies 2. Aircraft damage.**—*From authors' abstract.*

6B-133 551.510.41:016

†Stepanova, Nina A., **A selective annotated bibliography on carbon dioxide in the atmosphere.** *Meteorological Abstracts and Bibliography*, Boston, 3(2):137-170, Feb. **1952.** 229 refs. **MH-BH**—Annotations for 229 references to literature on the content of carbon dioxide in the air, at the surface of the earth and aloft comprise the bibliography. A chronological arrangement is followed. Subject and geographic outlines are included. *Subject Heading:* **1. Bibliography on carbon dioxide in the atmosphere.**—*M.L.R.*

6B-134 551.507.362:016

†Sutton, G. P., (*North Amer. Aviation, Downey, Calif.*), **Rocket propulsion progress: a literature survey.** *American Rocket Society, Journal*, New York, 22(1):17-27, 31, Jan./Feb. **1952.** bibliog. p. 22-27, 31. **DLC**—This article presents a summary of the technical progress achieved in the field of rocket propulsion as reflected in the published literature, and is also a guide to outstanding articles in the field. (*Same item as* 5.3-66, March 1954, *MAB.*) *Subject Headings:* **1. Rocket development 2. Rocket bibliographies.**—*NRL abstract.*

6B-135 551.585.55:016

†Tsyganov, M. S., **K voprosu o vysykhanii stepeĭ.** [On the problem of drying out of steppes.] *Pochvovedenie*, Moscow, No. 4:367-373, April **1952.** 49 refs. **DLC**—Author discusses his assumption that the Russian steppes are drying out and opposes the theory of BERG that climatic zones are moving from north to south. A valuable bibliography on this subject is added, giving 41 Russian and a few foreign papers. (*Same item as* 4.9-227, Sept. 1953, *MAB.*) *Subject Headings:* **1. Bibliography on arid zones 2. Steppes 3. U.S.S.R.**—*A.A.*

6B-136 551.513.2:551.557:016

U. S. Air Weather Service, **Bibliography on the jet stream.** Its *AWS Bibliography*, No. 12, March **1952.** 9 p. **DWB**—Bibliography contains 108 references to articles published between 1949-1952. Entries are arranged alphabetically by author. A subject classification code letter is assigned to each reference. Subject coverage includes description of occurrences, forecasting; associated factors such as turbulence, clouds, pressure systems, etc; causes; dynamics; historical development and geographical area. (*Same item as* 4G-117, July 1953, *MAB.*) *Subject Headings:* **1. Jet stream bibliographies 2. Zonal circulation.**—*M.R.*

6B-137 551.521.61:551.586:615.8:016

†U. S. Library of Congress. Technical Information Div., **Infrared in relation to skin and underlying tissue.** Washington, D. C., April **1952.** 20 p. **DLC**—This bibliography includes references to literature published during the period from 1935 to 1951, relating to the infrared optical properties of skin and underlying tissue, the physiological and pathological effects of infrared radiation and the use of infrared in diagnoses in therapy involving these areas. Material relating to blood, deep-lying tissues and internal organs has been excluded. The bibliography is not annotated. (*Same item as* 4H-168, Aug. 1953, *MAB.*) *Subject Heading:* **1. Infrared radiation bibliographies.**—*I.L.D.*

6B-138 551.586:615.8:016

†*Vogt, Heinrich Wilhelm and Amelung, Walter, **Einführung in die Balneologie und medizinische Klimatologie. Bäder- und Klimaheilkunde.** [Introduction to balneology and medical climatology. Balneotherapy and climatic therapy.] 2nd ed. Berlin, Springer, **1952.** 266 p. 29 figs., 40 tables, bibliog. p. 258-262. **DLC**—Contains hundreds of references to literature on balneology and medical climatology (through 1951) arranged alphabetically by author under these 2 main headings. The works referred to are mostly from German (Swiss or Austrian) sources, and deal with the physical aspects of the subject in quantitative fashion. (*Same item as* 4.10-246, April 1953, *MAB.*) *Subject Headings:* **1. Balneology bibliographies 2. Medical meteorology bibliographies.**—*M.R.*

6B–139 551.591:016

†Weiner, Jack and Leikind, Morris C. *(comp.)*. **Visibility: a bibliography.** Wash., D. C. The Library of Congress, Technical Information Div., July **1952.** 90 p. 2008 refs. **DLC**—This comprehensive bibliography, prepared over a period of 4 years, contains material arranged under the following major headings: I. Visual detection factors in the laboratory; II. Physical factors affecting visibility in the field; III. Actual observations in various parts of the world; IV. Engineering (including meteorological, military and naval) applications of visibility. There is an author, but not a subject, index. *(Same item as* 3I–269, Sept. 1952, *MAB.)* *Subject Headings:* **1. Visibility bibliographies. I. Gibson, Jack R.** *(ed.).*—*N.T.Z.*

6B–140 551.557:551.510.52:016

†Widger, William K., **Survey of available information on the wind fields between the surface and the lower stratosphere.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 25, Dec. **1952.** 154 p. fig., 46 refs. Append. I: Mintz Yale and Dean, Gordon, **Observed mean field of motion of the atmosphere** *(see* 4.6–9, June 1953, *MAB).* Append. II: **Annotated bibliography on high level winds** *(see* 6B–150). Append. III: Discussion of and example from Henry, T. J. G. and Armstrong, G. R., **Aerological data for Northern Canada** *(see* 1–152, Jan. 1950, *MAB).* Append. IV: Cale, Richard E., **Preliminary report on predominant atmospheric windflow and temperature patterns for the North Pacific and East Asia.** charts. **DLC, MH-BH**—An attempt to assemble and analyze all of available data and information on winds in the troposphere, as a companion volume to *Air Force Surveys in Geophysics*, No. 24 which covers winds in the stratosphere. Climatological information regarding force and direction of winds at various heights and in various regions and theoretical information regarding circulation and accuracy of forecasting, plus abstracts of a large number of papers taken from **Meteorological Abstracts** and other supplementary information as listed above, make this a valuable, if not a complete, compendium of information and source of data on wind. *(Same item as* 6.1–13, Jan. 1955, *MAB.)* *Subject Headings:* **1. Tropospheric wind bibliographies 2. Upper air winds 3. Literature surveys 4. Meteorological abstracts.**—*M.R.*

6B–141 551.583.3:016 529

†Zeuner, Friedrich Eberhard, **Dating the past: an introduction to geochronology.** 3rd ed., rev. and enl. London, Methuen [**1952**]. 495 p. 101 figs., tables, bibliog. p. 421–470. **DLC**—A discussion of the various methods of geological dating, some of which involve paleoclimatic considerations. The bibliography of approximately 1000 books and papers in 15 languages is arranged according to the chapters in the book. *See* Bullard, E. C., **Time and climate,** *Nature*, London, 168 (4263):48, July **1951** for a critical review of the 2nd ed. *(See item* 3.3–220, March 1952, *MAB.)* *Subject Headings:* **1. Climatic changes 2. Bibliography on geochronology 3. Paleoclimates 4. Reviews. I. Bullard, E. C.**—*C.E.P.B.*

6B–142 551.591:016

†Zikeev, Nikolay T., **Selective annotated bibliography on visibility.** *Meteorological Abstracts and Bibliography*, Boston, 3 (9):942–985, Sept. **1952.** 281 refs. **MH-BH**—Representative list of references, with annotations, to literature on the numerous physical and physiological aspects of visibility and sources of data. Although not complete for western literature, the bibliography contains a number of references to Slavic literature which are not as well known. A very detailed subject outline and a geographic outline are provided. The bibliography is arranged chronologically *Subject Heading:* **1. Bibliography on visibility.**—*M.R.*

1953

6B–143 551.510.53:06:016

†American Geophysical Union. Committee on Problems of the Upper Atmosphere, **Report of the Committee, 1951, 1952,** W. W. Kellog, Chairman. *American Geophysical Union, Transactions*, 34 (1):115–121, Feb. **1953.** fig., table, bibliog. p. 119–121. **MH-BH**—The year 1951–1952 is significant for the completion of a number of research projects started shortly after World War II. Seventy references—chiefly American works with a few French and Russian papers—are concisely reviewed and serve as a guide to more detailed information of the year's activity in upper atmosphere research. *(Same item as* 5.2–85, Feb. 1954, *MAB.)* *Subject Headings:* **1. Upper atmosphere research 2. Rocket soundings 3. Solar-atmospheric relationships 4. A.G.U. Committee on Problems of the Upper Atmosphere 5. United States.**—*A.A.*

6B–144 551.586:72:016

†Aronin, Jeffrey Ellis, **Climate and architecture. Progressive architecture book.** N. Y., Reinhold Pub. Corp., **1953.** 302 p. 291 figs., bibliog. p. 282–296. **DLC**—This book deals exclusively

and comprehensively with the subject of climate and weather in relation to architecture or building design. The bibliography, an excellent guide to further reading, is unusually complete and up-to-date. (*Same item as* 5.9 1, Sept. 1954, *MAB.*) *Subject Headings:* **1. Building climatology 2. Applied climatology bibliographies.**—*M.R.*

6B–145 551.579:551.577.37(773)

*Chow, Ven Te, **Frequency analysis of hydrologic data with special application to rainfall intensities.** *Illinois. Univ. Engineering Experiment Station, Bulletin Series*, No. 414, July **1953.** 80 p. 9 tables, refs., 16 figs., bibliog. p. 79–80. **DWB**—The methods and theory of analysis, the selection and preparation of hydrologic data for analysis, and examples of such analysis for rainfall data obtained at Chicago, Ill. (1913–47) are presented in a most thorough manner. Many different methods are illustrated, rainfall maximum, exceedence and time-intensity-frequency curves used in extrapolating existing frequency data tables presented for guidance of engineers, especially highway engineers and students of hydrology. Sources of precip. data for the U. S. are listed (data from 350 first order, 650 second order, and 9,000 cooperating stations are available). Inaccuracies of data, and sources thereof are treated at some length. *Subject Headings:* **1. Hydrometeorological data analysis 2. Rainfall intensity duration frequencies 3. Chicago, Ill.**—*M.R.*

6B–146 551.5:63:06:016

†De Fina, Armando Leopoldo, **Progreso registrado en la Republica Argentina en material de meteorología agrícola, 1947 Agosto 1953.** [Progress in Argentina in the field of agricultural meteorology, 1947–August 1953.] *La Plata, Argentina. Universidad Nacional. Facultad de Agronomía, Revista*, Ser. 3, 29(2):165–180, **1953.** 85 refs. **DLC, DWB** (reprint)—The recent work along agrometeorological or agroclimatological lines in Argentina is summarized and the pertinent literature cited, under the headings of: I. New methods, concepts and definitions; II. Curriculum for agricultural meteorology in the University; III. Technical work by: (A) Dept. of agrometeorology under J. J. Burgos and (B) Institute of Soils and Agrotechnology. Networks of agrometeorology and evapotranspiration studies, international coordination and bibliographic work, among others, are outlined. *Subject Headings:* **1. Agro-meteorological services 2. Evapotranspiration studies 3. Agricultural meteorology bibliographies 4. Argentina. I. Burgos, J. J.**—*M.R.*

6B–147 551.521.63:551.586:016

†Dordick, Isadore L., **Selective annotated bibliography on radiation bioclimatology.** *Meteorological Abstracts and Bibliography*, Boston, 4(8):925–958, Aug. **1953.** 170 refs. **MH-BH**—This annotated bibliography contains 170 references to literature dealing with the biological action of radiations which are normally present in the atmosphere and their chemical effects on the organism. The more important papers published between 1928–1953 comprise the bibliography. A detailed subject outline is provided. *Subject Heading:* **1. Radiation bioclimatology bibliographies.**—*I.L.D.*

6B–148 551.594.7:621.396.029.6:016

†Duke University. Dept. of Physics, **Microwave research.** Contract AF 19(604)-258, Final Report, Jan. 31, **1953.** 5 p. bibliog. of 60 publications done under the contract on microwave spectroscopy of liquids, gases, matter. **DWB**—Work since Feb. 1952 includes methods and instruments developed to make spectroscopy in the entire region from 1 to 5 mm a fact. The first spectral line in the 1–2 mm wave length were measured. Structure and characteristics of oxygen were developed. The second line—the water vapor absorption line at 1.62 mm was observed which is of significance (because of the complete and accurate determination of the structure of the water molecule from microwave measurements on H_2O) in relation to propagation of millimeter waves through the atmosphere. *Subject Headings:* **1. Microwave spectroscopy bibliographies. I. Gordy, Walter.**—*W.N.*

6B–149 551.508.79:551.579.5:631.4

†Eastwell, B. A., **In situ methods of measuring soil moisture content—a critical résumé.** *British Electrical and Allied Industries Research Association Technical Report*, W/T27, **1953.** 19 p. 22 figs., table, 156 refs. **GB-MO**—The importance to agriculture of knowing the amount of soil moisture is stressed. Explanations are given of the *pF* scale of available moisture (based on log soil moisture suction in cm water) and wilting point (about *pF* 4.2). Methods of measuring moisture content are discussed under: oven, gravimetric absorbent block, resistance to pressure, tensiometer, methods depending on thermal or electrical properties (including plaster of paris gages), radioactive isotopes, and Penman's theoretical approach through energy balance. Calibration of meters is considered and a number of conclusions and recommendations set out. *Subject Headings:* **1. Soil moisture instruments 2. Soil moisture measurement bibliographies.**—*C.E.P.B.*

6B–150 551.557:016

†Evans, Gwynne J., **Selective annotated bibliography on high level winds (500–100 mb).** *Meteorological Abstracts and Bibliography*, Boston, 4(5):613–655, May **1953.** 272 refs. Also: Evans, Gwynne J. and Kramer, Mollie P., **Selective annotated bibliography on stratospheric and ionospheric winds (above 100 mb).** *Ibid.*, 4(6):733–754, June 1953. 128 refs. Also their: **Annotated bibliography on the jet stream.** *Ibid.*, 4(7):822–845, July 1953. 137 refs. **MH-BH**—The three bibliographies present a total of 537 annotated references to high level winds. Detailed outlines to subjects covered in each bibliography are provided. Items are arranged chronologically. *Subject Heading:* **1. Bibliography on upper air winds.**—*M.L.R.*

6B–151 551.510.535:016 551.594.5:016 550.38:016

†Ianovskiĭ, B. M., **Zemnoĭ magnetizm.** [Geo-magnetism.] 2d ed. Moscow, Gosud. Izdat. Tekhniko-Teoreticheskoĭ Literatury, **1953.** 591 p. 272 figs., 46 tables, 87 refs. **DLC**—A carefully prepared bibliography of 87 refs is divided in four parts to correspond to the four major parts of the text. Those on the ionosphere and the aurora are found in Part II, and those on the origin and variations in the earth's magnetic field, in Part I. *Subject Headings:* **1. Terrestrial magnetism bibliographies 2. Ionosphere bibliographies.**—*M.R.*

6B–152 551.510.52:621.396:016

†Institute of Radio Engineers Committee on Wave Propagation, **Tropospheric propagation: a selected guide to the literature.** *Institute of Radio Engineers, Proceedings*, 41(5):588–594, May **1953.** numerous refs. **DWB**—This bibliography is mainly for the non-specialist seeking information on details of tropospheric propagation. The subject arrangement of the contributions reviewed is as follows: Books; general discussions; diffraction; refraction (rays, modes and ducts, elevated layers, angle of arrival); lobe structure; time and space variations of field strength, attenuation by atmospheric gases and precipitation; ground and sea roughness; meteorological echoes; velocity of propagation. The review is based on American and British sources. *Subject Heading:* **1. Radio wave propagation bibliographies.**—*G.T.*

6B–153 551.510.535:51.590.25:016

†Kaiser, T. R. (*Univ. of Manchester*), **Radio echo studies of meteor ionization.** *Advances in Physics*, London, 2(8):495–544, Oct. **1953.** 25 figs., refs. p. 543–544, eqs. **DLC**—In this comprehensive review article numerous aspects of the quantitative investigation of the physical properties of the upper atmosphere by 4 to 10 m radio reflections from meteor and meteor trails are discussed theoretically and empirically, and the results of a large amount of original investigation made by Jodrell Bank, England, and never before published, incorporated therein. The 38 references, arranged alphabetically, are referred to in the text. (*Same item as* 5.5–6, May 1954, *MAB.*) *Subject Headings:* **1. Meteor ionization bibliographies 2. Radio echo meteor soundings 3. Upper atmosphere physics.**—*M.R.*

6B–154 551.583.3:551.311.1:016

†Klebelsberg, R. v., **Bibliographie.** [Bibliography (of glaciology and glacial geology).] *Zeitschrift für Gletscherkunde und Glazialgeologie*, Innsbruck, 1(2):240–352, 1950. continued in *Ibid.*, 2(2):375–466, **1953. DLC**—This bibliography is divided into two main parts: subject and regional and a small section, "personal." The first part deals with snow and firn, avalanches, all forms of ice, glaciers and glaciation, glacial climatic oscillations, morphology, deposits, loess, glaciers and life, all the aspects of ice ages, post-glacial plant fossils and pollen analysis, oscillations of sea level and effect of radiation on glaciers. Many of the entries include short abstracts in German. (*Same item as* 2.2–139, Feb. 1951, *MAB.*) *Subject Heading:* **1. Bibliography on glaciology.**—*C.E.P.B.*

6B–155 551.582(265/6):016

†Kramer, Mollie P., **Selective annotated bibliography on the climatology and marine meteorology of the Pacific.** *Meteorological Abstracts and Bibliography*, Boston, 4(9):1036–1082, Sept. **1953.** 280 refs. **MH-BH**—A representative selection of the literature on the marine meteorology and climatology of the Pacific, its island groups and selected coastal regions and marginal seas. The subject matter of the literature is grouped under geographical divisions. The bibliography is annotated and the items arranged chronologically. *Subject Headings:* **1. Climatology bibliographies 2. Marine meteorology bibliographies 3. Pacific Ocean.**—*M.P.K.*

6B–156 551.509.67:016

†Krick, Irving P. (*comp.*), **Bibliography on weather modification and field operations,** using the combined facilities of Irving P. Krick, American Institute of Aerological Research (and) Water Resources Development Corporation. Denver, Colorado, American Institute of Aerological Research, March 25, **1953.** unpaged. Mimeo. **DWB**—A list of 104 lectures or reports prepared

during 1947–53 by the Krick Cloud Seeding Corporation for various agencies interested in contracting with him for artificial precipitation studies or experiments. Most of the areas covered are in the dry regions of the states of Montana, Washington, Oregon, California, Arizona, New Mexico, Idaho, Wyoming, Colorado, the Dakotas or Texas. (The titles of these reports are listed in Pt. III of 4 8), Aug. 1953, *MAB.*) (*Same item as* 5.2–77, Feb. 1954, *MAB.*) *Subject Headings:* **1. Cloud seeding bibliographies 2. Artificial precipitation 3. Cloud seeding studies 4. Western United States.**—*M.R.*

6B–157 551.508.77:016

†Kurtyka, J. S., **Methods of measuring precipitation for use with the automatic weather station.** *Illinois. State Water Survey Div., Report of Investigation*, No. 20, **1953.** 178 p. 193 figs., 11 tables, 1079 refs., many with annotations. At head of t-p: *Illinois. State Water Survey Div., Precipitation Measurements Study, Annual Report*, Feb. 15, 1952–Feb. 15, 1953. **MH-BH, DLC**—This report presents an amazingly thorough review of the history of rain measurements, type, material, form, height, diameter, exposure, etc. of rain and snow gages, recording gages, vectopluviographs, totalizers, shielded gages, rate of rainfall recorders, drop size and water content measurements, etc. of every conceivable pattern from the middle of the 19th century to date and from every country. Nearly 200 photographs or drawings illustrate many of these gages or devices. The annotated bibliography contains 1079 references carefully checked and arranged alphabetically by author with complete bibliographic details following the general style of Meteorological Abstracts. (*Same item as* 5.3–6, March 1954, *MAB.*) *Subject Headings:* **1. Rain and snow gage bibliographies 2. Precipitation gages 3. History of meteorology. I. Contract DA-36-039 sc-15484 II. Illinois. State Water Survey Div. Meteorological Laboratory.**—*M.R.*

6B–158 551.510.42:016

†London. Science Museum. Science Library, **Particle counting and analysis.** Its *Bibliographical Series*, No. 719, [1953?] 5 p. Mimeo. **MH-BH**—About 100 unannotated references to articles or works on various aspects of micromeritics. Dust or aerosol counting instruments, techniques and statistical methods of computing the data figure heavily in the literature. Material is arranged chronologically from 1923 to 1953. (*Same item as* 5.3–119, March 1954, *MAB.*) *Subject Headings:* **1. Micromeritics bibliographies 2. Dust counting techniques 3. Aerosol measurement.** —*M.R.*

6B–159 551.5:92

†Margetić, F. (*Zagreb*), **Prof. Dr. Stjepan Škreb.** [Obituary.] *Yugoslavia. Hidrometeorološka Služba, Vesnik*, 2 1):1–5, Jan., March **1953.** List of his publications p. 3–5. **DWB**—During the 73 years of his life in Zagreb (1879–1952), S. ŠKREB worked as a high-school teacher, high-school inspector, director of the Geophysical Institutes, instructor in geophysics and, finally, professor of geophysics at the University of Zagreb. His 38 papers are mostly articles on various aspects of Croatian climatology, published in German and Croatian periodicals. *Subject Headings:* **1. Author bibliographies 2. Bibliography of Stjepan Škreb 3. Climatology bibliographies. I. Škreb, Stjepan.** —*G.T.*

6B–160 551.521.9:016

†Massachusetts Institute of Technology. Radiation Laboratory, **Radiation Laboratory Series Index,** edited by Keith Henney. Foreword by Vannevar Bush. Introductory notes by Karl T. Compton, Lee A. DuBridge and Louis N. Ridenour. N. Y., McGraw-Hill, **1953.** 160 p. Its *Radiation Laboratory Series*, v. 28. **DWB**—This Index is the concluding volume in the series of 28 volumes which cover the technical details of radar. It is a subject index only; the names of persons, companies and laboratories are listed in the indexes of the individual volumes. In addition to the index this volume contains the following articles: Establishment of the Radiation Laboratory, KARL T. COMPTON; Organization of the Radiation Laboratory, LEE A. DUBRIDGE; and Preparation of the Radiation Laboratory Series, LOUIS N. RIDENOUR. *Subject Headings:* **1. Microwave radiation bibliographies 2. Subject indexes. I. Henny, Keith** (*ed.*).—*I.L.D.*

6B–161 551.510.53:546.33:016

†Miller, Lewis E., **Sodium in the upper atmosphere.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 43, June **1953.** 94 p. 3 figs., 4 tables, eqs. Section of abstracts, p. 23–91. **DWB**—A literature survey and analysis based on 120 papers on various aspects of the spectroscopic methods of determining the origin, existence, and variations in Na content of the upper atmosphere since the first discovery of the 5892 Å lines in 1929 by SLIPHER at Flagstaff, Arizona. The abstracts are quite informative giving tabular results wherever possible. Theory is also presented. (*Same item as* 5.9–7, Sept. 1954, *MAB.*) *Subject Headings:* **1. Sodium in atmosphere 2. Bibliography on sodium in the atmosphere 3. Abstracts.**—*M.R.*

6B–162 551.571.7:016:019,941

†Miller, Lewis E., **Vertical distribution of water vapor in the stratosphere and upper atmosphere** *U. S. Air Force. Cambridge Research Center, AFCRC Technical Report*, 53-31; *Air Force Surveys in Geophysics*, No. 45, Sept. **1953.** 118 p. tables, graphs, 149 refs. (118 of which are abstracted), eqs. **MH-BH**—An intensive and extensive review of the literature on many aspects of observation or determination of water vapor content in the upper atmosphere. The historical review, theory, discussion of instruments and methods, analysis of results and presentation of quantitative data in tabular and graphic form occupy the first portion. Abstracts of about 150 articles and a bibliography arranged chronologically by subject area, plus an author index make this a valuable reference source. A few items on mother-of-pearl clouds, auroras and night sky light are included as they have bearing (indirectly) on water vapor content. (*Same item as* 5.7–8, July 1954, *MAB.*) *Subject Headings:* **1. Water vapor in stratosphere 2. Abstracts 3. Bibliography on water vapor in stratosphere.**—*M.R.*

6B–163 551.586:72:016

†National Research Council, Wash., D. C. Building Research Advisory Board, **Preliminary BRAB Bibliography of housing and building in hot-humid and hot-dry climates.** Cover-title: BRAB, May **1953.** Tropical Housing Bibliography. 32 p. **DWB**—The purpose of this bibliography is to provide climatic, physiological architectural construction and other technical data for building efficient and comfortable dwellings in hot-humid and hot-dry climates. The items are classified into seven sections: climatology and physiology; architecture; structure and structural components, soils and foundations; building materials; construction methods, air conditioning and ventilation; and housing and building. The items in each section are further subdivided into several categories and are arranged geographically. *Subject Headings:* **1. Bioclimatology 2. Building climatology 3. Tropical climatology 4. Tropical housing bibliographies.**—*I.L.D.*

6B–164 551.510.535:551.507.362(02)

*†Newell, Homer E., Jr. (*Naval Res. Lab., Wash., D. C.*), **High altitude rocket research.** N. Y. Academic Press, **1953.** 298 p. 93 figs., 37 tables, numerous refs. at end of each chap. Price: $7.50. **DLC**—This thoroughly readable but technical book on a timely subject discusses the upper atmosphere in general, the use of various types of rockets in present day investigations, and tabulation of rocket flights made from March 1946 to Dec. 1952 with the essential facts about these flights. Accuracy of equipment and methods used and possible sources of errors are emphasized. Only published results and data have been used. A list of 69 references is appended. A subject and author index add to the usefulness of the book. (*Same item as* 5.5–7, May 1954, *MAB.*) *Subject Heading:* **1. Rocket observation bibliographies.**—*M.R.*

6B–165 551.501.83:016

†Nupen, Wilhelm; Rigby, Malcolm and Martinoff, Katherine, **Selective annotated bibliography on thunderstorm sferics.** *Meteorological Abstracts and Bibliography*, Boston, 4(11):1304–1359, Nov. **1953.** 295 refs. **MH-BH**—The 295 references have been chosen as representative of the vast amount of literature available on the subject. A detailed subject outline indicates the wide variety of aspects covered in this bibliography on atmospherics from thunderstorms. A geographic outline is also provided. The references, which are arranged chronologically, are annotated. *Subject Heading:* **1. Bibliography on thunderstorm sferics.**—*M.L.R.*

6B–166 551.509.67(05):016

Puy-de-Dôme. Observatoire, **Bulletin, (Ser. 2),** no. 1, Jan. **1953–.** Latest issue seen, no. 3, July 1954. Sub-title: Organe de liaison des physiciens que étudient les nuages et les moyens d'agir sur leur évolution. Quarterly. Editor, H. Dessens. Price: 100 fr. Continuation of *Puy-de-Dôme. Institut et Observatoire de Physique du Globe, Bulletin* (*Ser.* 1), no. 1–10, 1929–1948. Regular feature: Bibliographie. **MH-BH, DWB**—Lengthy abstracts in French review world literature dealing with laboratory and field work in cloud physics and cloud seeding (experimental meteorology.) *Subject Heading:* **1. Cloud seeding bibliographies.**—*M.R.*

6B–167 551.515.11:016

†Raethjen, Paul, **Dynamik der Zyklonen.** [Cyclone dynamics.] Leipzig, Akademische Verlagsgesellschaft Geest & Portig, **1953.** 384 p. 92 figs., 3 tables, bibliog. p. 339–373, 357 eqs. Price: DM 35—. *Probleme der Kosmischen Physik*, v. 27. **DLC**—Contains a very complete alphabetical list of 840 references to cyclone theory, structure and dynamics. (*Same item as* 5.3–10, March 1954, *MAB.*) *Subject Heading:* **1. Cyclone dynamics bibliographies.**—*A.A.*

6B–168 551.510.53:016

†Resnick, Robert and Stein, Stanley, **The spectra and chemical kinetics of the upper atmosphere. A literature survey.** Pittsburgh. Univ. Spectroscopy Laboratory, Contract AF 19(122)–478,

Scientific Report, No. 1, Pts. 1–6, Oct. 31, 1952–Aug. 10, 1953. 6 pieces. **DWB**—Contents: Pt. 1, Subject classification; Pts. 2–4, Author classification; Pt. 5, Subject classification (of supplementary material); Pt. 6, Author classification (of supplementary material). This voluminous literature survey covers in detail the recent scientific treatises on airglow, atmospheric composition, auroras, ionospheric spectra, spectra and chemical kinetics of atmospheric particles, lightning, luminous clouds, meteors, solar influences, atmospheric pressure, temperature and meteors above 30 km and zodiacal light. A list of journals cited is appended to each part. Abstracts of varying lengths, taken mainly from **Physics Abstracts, Chemical Abstracts** and **Meteorological Abstracts and Bibliography,** are included with about $\frac{3}{4}$ of the citations in the author classification volumes (II, III, IV and VI). A list of abstractors is appended at the end of each of these volumes. At least 4000 items are included in the author and in the subject volumes. (*Same item as* 5.11–7, Nov. 1954, *MAB.*) *Subject Headings:* **1. Auroral bibliographies 2. Upper atmosphere bibliographies.**—*M.R.*

6B–169 551.594.5:016

†Rice, Mary L. and Rigby, Malcolm, **Selective annotated bibliography on auroras.** *Meteorological Abstracts and Bibliography,* Boston, 4(10):1162–1213, Oct. **1953.** 248 refs. Also their: **Selective annotated bibliography on the physics of aurora.** *Ibid.,* 5(3):373–424, March **1954.** 263 refs. **MH-BH**—For the bibliography on Auroras, 248 references were chosen which deal with the general or descriptive aspects of this phenomenon or with specific auroral displays. A subject outline indicates the several aspects treated and a geographic outline, the areas covered. A chronological arrangement determined by the date of imprint (334 B.C.-1953 A.D.) is followed with alphabetical arrangement by author within any given year. For the bibliography on Physics of Aurora, 263 references to auroral theories, relationships between auroras and the sun and geomagnetism, investigations of auroral spectra, techniques of auroral research and research on upper atmosphere through investigations of auroral phenomena. The arrangement of this bibliography follows that of the first one. Both bibliographies are annotated. *Subject Heading:* **1. Bibliography on auroral physics.**—*M.L.R.*

6B–170 550.34(08)

†Symposium on Microseisms, Harriman, N. Y., Sept. 4–6, 1952, [**Proceedings.**] Wash., D. C., National Academy of Sciences, National Research Council, Dec. **1953.** 125 p. diagra., refs., eqs. Contents: Macelwane, J. B., **Sketch of the history of microseismology;** Ramirez, J. R., **Tripartite stations and direction of approach of microseisms;** Gilmore, Marion H., **Amplitude distribution of storm microseisms;** Båth, Markus: **Microseismic period spectra and related problems in the Scandinavian area;** Longuet-Higgins, M. S., **Can sea waves cause microseisms?;** Van Straten, F. W., **Storm and surf microseisms;** Press, Frank and Ewing, Maurice, **The ocean as an acoustic system;** Scholte, J. G., **On theories of the origin of microseisms. DWB**—Extensive references to literature on microseism research, recording, physics, analysis and possible origin in sea (waves, surf or cyclonic storms) are to be found at the end of each article. (For fuller abstract *see* 5.11–8, Nov. 1954, *MAB.*) *Subject Headings:* **1. Microseism research 2. Microseism bibliographies 3. Symposia. I. U. S. Air Force. Geophysical Research Directorate.**—*M.R.*

6B–171 551.594.2:016

Thunderstorm electricity. Horace R. Byers (*ed.*). Chicago, Univ. of Chicago Press, **1953.** 344 p. figs., tables, refs. at end of each ch., eqs. Price: $6. **DLC, DWB**—This important "Compendium" of present day knowledge of thunderstorm electricity and associated phenomena and applications is an outgrowth of the Conference on Thunderstorm Electricity which was held at Chicago on April 10–14, 1950 under the auspices of the U. S. Air Force, Geophysical Research Directorate. Numerous references to the most important literature in each specialized field is included. (*Same item as* 4.10–12, Oct. 1953, *MAB.*) *Subject Headings:* **1. Bibliography on thunderstorm electricity. I. Byers, Horace R.** (*ed.*) **II. Conference on Thunderstorm Electricity, Univ. of Chicago, April 1952.**—*M.R.*

6B–172 551.579:551.588.1:016

†United Nations Educational Scientific and Cultural Organization, **Reviews of research on arid zone hydrology.** *UNESCO, Arid Zone Programme,* I, **1953.** 212 p. figs., 1622 refs., tables, maps in pocket. Price: $4.50; 25/–; 1,250 fr. **DWB**—This handbook of references and reviews for arid zone hydrology is an important document resulting from international scientific cooperation. For report of arid zone research in India and Pakistan, *see* 5.3–248, March 1954, *MAB*; in the United States, *see* 5.9–255, Sept. 1954, *MAB*; in the Union of South Africa and Angola, see 5.10–195, Oct. 1954, *MAB.* Extensive bibliographies are included in each of these individual reports. (*Same item as* 5.2–8, Feb. 1954, *MAB.*) *Subject Headings:* **1. Hydrologic bibliographies 2. Arid zone research 3. Hydrologic research 4. United States 5. India 6. Pakistan 7. Union of South Africa 8. Angola.**—*A.A., M.L.R.*

6B–173 627:551.57:016

†U. S. National Bureau of Standards, **Hydraulic research in the United States.** *U. S. National Bureau of Standards, Miscellaneous Publication*, 208, July 31, **1953.** 203 p. **DWB**—A bibliography of research projects, conducted by various hydraulic and hydrologic institutes in the United States and Canada. The addresses of laboratories and supervisors are given, the nature of the single projects is described and publications, if any, are listed. Similar bibliographies for 1951 and 1952 were published in the same series as No. 201 and 205. The meteorologist will find in this guide much more than could be suspected from the title. Besides the engineering applications of hydromechanics, there are numerous items on such problems as air pollution, apparatus (cyclone models, flood forecasting devices, radio and conventional precipitation gages, wind tunnels), bibliographies on water measurement and the rivers of the world, boundary layer, bubble diffusion, coriolis coefficient, diffusion of gases, heat and particles, drainage, evaporation and transpiration of arid regions, grasslands, lakes and urban areas, floods, forest influences, frost in ground, ground water, hydrologic cycle and frequency studies, ice, infiltration, instruments (anemometers, pressure fluctuation meters, wave gages, etc.), irrigation and water supply, lake levels and storm winds, model lows, percolation, rainfall (effect of altitude, artificial rain, radar measurements, maximum rainfall, rainfall-runoff relationships, tree ring studies), roughness phenomena, runoff, snow surveys and snow melt forecasts, soil moisture, soil permeability, streamflow forecasts, stream discharges, turbulence, watershed studies, waves, weather forecasting and wind effects (building design, wind tides and water levels, etc.). In a considerable number of cases no publications are available as yet, but inquiries concerning the project can be sent to the supervisors. *Subject Headings:* **1. Hydrologic research 2. Meteorology 3. United States. I. Middleton, Helen K.** (*ed.*) **II. Matchett, Sonya W.** (*ed.*). —*A.A.*

6B–174 551.582(7):016

§*†Vivitskiĭ, G. N., **Klimaty Severnoĭ Ameriki.** [Climates of North America.] Moscow. Gos. Izdat. Geogr. Lit., **1953.** 287 p. 55 figs., numerous tables, 291 refs. **DLC**—A synoptic as well as statistical review of the climate of the entire continent of North America, starting with Alaska and including Canada, Greenland, the United States, Mexico, Central America and the West Indies. The book represents a systematic and creative review and integration of all of the generally available literature on North America or parts thereof as shown in the extensive bibliography. (*Same item as* 5.11–9, Nov. 1954, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Climate of North America 3. North America.**—*M.R.*

6B–175 551.557:551.510.535:016

†Wiewall, Miguel, Jr.; Medina Hernández, José and García de Quevedo, José L., **Bibliography of the literature of the ionosphere pertaining to ionospheric winds.** Puerto Rico. Univ. College of Agriculture and Mechanic Arts, Mayaguez, Contract AF 19(122)-476, Scientific Report, No. 1, **1953.** 89 p. **DWB**—Pt. I contains abstracts of over 150 papers, published during the past 50 years, on the subject of high level winds mainly from telescopic and radio meteor trail observations, radio fading, (sporadic E-layer data), etc. Pt. II is a logical summary of the knowledge gained from these studies. An author and subject index are included. (*Same item as* 5.10–167, Oct. 1954, *MAB.*) *Subject Heading:* **1. Ionosphere wind bibliographies.**—*M.R.*

6B–176 551.594:016

†Wormell, Thomas Wilson, **Atmospheric electricity; some recent trends and problems.** *Royal Meteorological Society, Quarterly Journal*, 79(339):3–38, Jan. **1953.** 4 figs., 6 tables, 91 refs., 8 eqs. **DWB**—This is No. 8 of the series of Reviews in Modern Meteorology. It presents a comprehensive survey of the literature on various aspects of the subject. (*Same item as* 4.7–217, July 1953, *MAB.*) *Subject Heading:* **1. Atmospheric electricity bibliographies.**—*C.E.P.B.*

6B–177 551.579(02):016

†Wundt, Walter (*Hon. Prof. Freiburg Univ.*), **Gewässerkunde.** [Hydrology.] Berlin, Springer-Verlag, **1953.** 320 p. 185 figs., tables, bibliog. p. 305–310. **DLC**—A textbook on hydrology covering in great detail the many aspects of scientific and engineering hydrology. The extensive bibliography is devoted almost exclusively to German literature. (*Same item as* 5.2–9, Feb. 1954, *MAB.*) *Subject Heading:* **1. Hydrologic bibliographies.**—*M.R.*

1954

6B–178 629.19(05):016

Astronautics, N. Y., vol. 1, no. 1, Fall, **1954.** Subtitle: Journal of the American Astronautical Society. Quarterly. Editor, Martin Caidin. Price: to non-members, $6.00 annual; $1.50 per issue, from the Society, 516 Fifth Avenue, N. Y., 36. A special section, "Abstracts," compiled by

Norman V. Peterson, p. 27–28, 32. Items arranged in subject groups, with brief annotations. **DWB**—This new journal contains articles and reviews of articles on physical and engineering as well as physiological problems of space flight—especially flight beyond the earth's field of gravity. The Society was founded in 1953 to promote sober scientific development and dissemination of theories and facts supporting theories of travel to planets or outside the earth's atmosphere. In the 1st number there are 38 briefly annotated references to articles in the following categories: aerodynamics; astronautics (general); astronomy and astrophysics; biology and medicine; communication, electronics and power generation; guidance control and navigation; heat transfer and fluid flow; materials, structures, and vehicle design; space flight mechanics; meteorology and aerophysics; rockets and ballistry; and propellants and propulsion. A good proportion of these articles are of meteorological interest. *Subject Headings:* **1. Astronautics journals 2. Astronautical abstracts. I. American Astronautical Society, N. Y.**—*M.R.*

6B–179 551.578.46:016

†Bader, Henri; Haefeli, R.; Bucher, E. and others, **Snow and its metamorphism.** *U. S. Snow, Ice and Permafrost Research Establishment, Translation*, No. 14, Jan. **1954.** 313 p. Figs., tables, bibliog. p. 210–218 (169 refs.) and p. 302–313 (33 refs.). Translation from German of their: **Der Schnee und seine Metamorphose.** *Beiträge zur Geologie der Schweiz, Geotechnische Serie, Hydrologie*, No. 3, **1939.** 350 p. **DGS**—The first of the unannotated bibliographies contains over 160 references to important literature on snow mechanics with reference to soil mechanics, avalanches, snow cover, etc., based mainly on Swiss or German sources (original titles as well as English translations of titles are given). The supplementary bibliography contains 33 references on radiative properties of snow, albedo of snow, etc. (*Same item as* 5.9 2, Sept. 1954, *MAB.*) *Subject Headings:* **1. Snow mechanics bibliographies 2. Snow albedo bibliographies 3. Translations.**—*M.R.*

6B–180 551.5:92:012

†Baur, Franz, **Verzeichnis der von Franz Baur bis 31 Oktober 1954 veröffentlichten Schriften. Zur 25. Wiederkehr des Tages der Gründung des Forschungsinstituts für langfristige Witterungsvorhersage.** [Bibliography of Franz Baur's writings up to October 31, 1954. In honor of the 25th anniversary of the founding of the Research Institute for Long-Range Weather Forecasting.] Bad Homburg, Carl Zeuner, Oct. **1954.** 16 p. Bibliographical note p. 1. **DWB**—About 200 publications of PROF. BAUR dating from 1905, when he was 17 years of age (a book on mathematical geography), to 1954 are arranged under the following heads: I. Books (8); II. Edited books (2); III. Works done in collaboration (6); IV. Articles published in scientific serials: a) general meteorology (92); b) dynamic meteorology (4); c) climatology (1); d) medical and bioclimatology (21); e) aerology (5); f) radiation (4); g) agrometeorology (5); h) astronomy and astrophysics (9); i) applied mathematics and statistics (8); etc. and V. Weather forecasting (28). *Subject Headings:* **1. Author bibliographies 2. Bibliography of Franz Baur 3. Long range forecasting bibliographies 4. Baur, Franz.**—*M.R.*

6B–181 551.5:6:016

†Brooks, C. E. P. and Evans, G. J., **Annotated bibliography on industrial meteorology.** *Meteorological Abstracts and Bibliography*, Boston, 5(10):1187–1230, Oct. **1954.** 235 refs. **MH-BH**—References to a representative selection of works dealing with the various ways in which meteorology and climatology affect industry and commerce. The 235 references are annotated and are arranged chronologically under six sub-headings. Various aspects of the subject are indicated in an outline. *Subject Heading:* **1. Industrial meteorology bibliographies.**—*M.L.R.*

6B–182 551.521.4:016 551.594.5:016

†Chamberlain, J. W. and Meinel, A. B., **Emission spectra of twilight, night sky, and aurorae.** (In: Kuiper, Gerard P. ed., **The earth as a planet.** Chicago, Univ. of Chicago Press, **1954.** p. 514–575. table, 18 figs., ref., p. 568–575.) **DWB**—Also issued in reprint form, as Chicago. University. Yerkes Observatory, Contract AF 19(122)-480, Technical Report, 1954. **DWB**—A thorough review of the subject of the twilight night sky and auroral emission problem, instrumentation, photometry, identification of spectra (forbidden atomic lines, etc.), height, variations in auroral spectra, auroral temperature and theory, height of emission layers and temperature of night airglow, excitation processes, theory, etc. A most complete bibliography (alphabetical by author) of about 300 items on airglow and auroral theory and spectra (without titles) is included. *Subject Headings:* **1. Auroral spectra 2. Night airglow bibliographies 3. Auroral physics bibliographies.**—*M.R.*

6B–183 551.594.51:06

†Conference on Auroral Physics, July 23–26, 1951, London, Ontario, **Proceedings,** ed. by N. D. Gerson; T. J. Seneshea and R. J. Donaldson, Jr. *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 30, July **1954.** 459 p. numerous tables, diagrs. (incl. photos.)

and eqs. Bibliogs. throughout. Alphabetical author and subject indexes. **MH-BH**—This volume contains 20 papers on various aspects of auroral physics and spectroscopy, radio reflection from aurora, solar-magnetic relationships, etc. There are over 600 references to literature in these various fields of upper atmospheric research, at the end of each article. *Subject Headings:* **1. Auroral physics bibliographies 2. Auroral physics conferences. I. U. S. Air force. Cambridge Research Center II. London, Ontario. Univ. of Western Ontario III. Gerson, Nathaniel IV. Keneshea, T. J.** (*ed.*) **V. Donaldson, R. J., Jr.** (*ed.*).—*M.R.*

6B–184 551.510.42:016

†Davenport, S. J. and Morgis, G. G., **Air pollution: a bibliography.** *U. S. Bureau of Mines, Bulletin*, No. 537, **1954.** 448 p. 3902 refs. arranged by subject, with the abstracts under each subject in chronological order, and then alphabetically by author. Author index, p. 427–448. **DWB**—An excellent compilation of over 3900 abstracts (taken from various sources in addition to those thich are original), arranged chronologically within each of about 40 heads or sub-heads and indexed by author. The articles of interest to meteorologists are found in sections entitled General aspects, Nature and source, Composition, Meteorology, Effects, Methods of determining, and Regulation of air pollution. The articles were published in all countries, and from the earliest times to 1952 inclusive. Abstracts are as a rule long and informative. *Subject Heading:* **1. Atmospheric pollution bibliographies.**—*M.R.*

6B–185 551.521:016

†Dordick, Isadore, L., **Selective annotated bibliography on global solar radiation.** *Meteorological Abstracts and Bibliography*, Boston, 5(7):829-855, July **1954.** 130 refs. **MH-BH**—Indicates available published sources of data on global solar radiation for use in calculating the radiation balance of the atmosphere and in determining heat load due to radiant energy for bioclimatological and applied meteorological studies. A geographic outline is a guide to the specific areas for which global radiation data are available. The 130 references are annotated. The bibliography is arranged chronologically. *Subject Heading:* **1. Bibliography on global solar radiation.**—*From author's introduction.*

6B–186 551.582:551.588.7(43)

*†Emonds, Hubert, **Das Bonner Stadtklima.** [Urban climate of Bonn.] *Bonn. Universität. Geographisches Institut, Arbeiten zur Rheinischen Landeskunde*, No. 7, **1954.** 64 p. 35 figs., 6 tables, 77 refs. English summary. **DWB**—A very comprehensive and thorough analysis of the climate and microclimate of the city of Bonn. Part A—an analysis of the macroclimate of Bonn on the basis of the meteorological data obtained at the city weather station; the characteristics of the individual weather elements at Bonn and also the equivalent temperature, humid cooling power and sultriness are compared with those of other cities. Parts B and C consist of a spatial and temporal analysis of the climatic characteristics prevailing within the area covered by the city. Data were obtained from automobile traverses as well as from permanent stations within the city. The survey included the dust and ozone content of the atmosphere. The data are presented tabularly and graphically. *Subject Headings:* **1. Urban climates 2. Climate of Bonn, Germany 3. Bonn, Germany.**—*I.L.D.*

6B–187 551.589(4):016

†Flohn, Hermann, **Witterung und Klima in Mitteleuropa.** [Weather and climate in central Europe.] Stuttgart, S. Hirzel, **1954.** 2nd rev. ed. 214 p. 33 figs., 9 tables, bibliog. (538 refs.) p. 188–210, append. (27 plates and 2 maps). *Forschungen zur Deutschen Landeskunde*, Vol. 78. **MH-BH**—The general tenor of the text is the dynamic-synoptic approach to climatology. The excellent bibliography of 538 references is divided into several subject groupings: Methods and history of climatology (54 refs.), Singularities (191 refs.), Air masses (34 refs.), Synoptic meteorology (50 refs.), Climatology of central Europe (108 refs.), and Miscellaneous (33 refs.). The book serves as an excellent survey of the literature in the field as almost every subject treated is introduced by a running summary of the work (especially that of German meteorologists) on the subject. (*Same item as* 5.9–3, Sept. 1954, *MAB.*) *Subject Headings:* **1. Dynamic climatology bibliographies 2. Central Europe.**—*M.R.*

6B–188 551.510.53:016

†Goody, R. M., **The physics of the stratosphere.** Cambridge, Eng., University Press, **1954.** 187 p. 60 figs., 17 tables, eqs., bibliog. p. 176–181. *Cambridge Monographs on Physics.* **DLC**—A treatise on atmospheric physics with chapters on temperature, composition, ozone, winds and turbulence and radiation written for the physicist. The bibliography contains approximately 185 references arranged by author with date and source but *without* titles and 16 references with author, date and brief indication of subject matter. (*Same item as* 5D–231, April 1954, *MAB.*) *Subject Headings:* **1. Upper atmosphere physics bibliographies 2. Textbooks.**—*M.L.R.*

6B–189 551.5:92:012

† [Hand, Irving F.], **Bibliography of scientific papers by I. F. Hand.** *Monthly Weather Review*, 82(2):48–49, Feb. **1954.** **DWB**—I. F. Hand retired on Sept. 30, 1953 after 41½ years with the U. S Weather Bureau, working mainly in the field of solar radiation. About 60 papers by HAND, mostly published in the **Monthly Weather Review**, are listed chronologically (1920–1954). *Subject Headings:* **1. Author bibliographies 2. Solar radiation bibliographies 3. Bibliography of Irving F. Hand.** —*M.R.*

6B–190 551.585.7(234.5):06:016

†International Conference on Alpine Meteorology, 3rd, Davos, April 12–14, 1954, **Tagungsprogramm und Mitteilungen.** [Program and reports.] (8 p.) over 70 refs. Also its: **Empfehlunge.** 1 p. Also its: **Autoreferate** (for: **Schnee und Eis, Meteorologie, und Bioklimatologie**). 3 pieces, 4 p. each. Also its: **Ergänzungen zu den Vertragsanmeldungen und den Autoreferaten.** 1 p. **DWB**—Program for Monday April 12 consisted of seminars on Snow and on Radiation; Tuesday, April 13, on Alpine Meteorology, Glaciology and Bioclimatology; Wednesday, April 15, on Precipitation in mountains and Mountain Winds. Abstracts of over 69 of the papers are given in "Ergänzungen" in mimeographed form. *Subject Headings:* **1. Alpine Meteorology Conference 2. Alpine meteorology bibliographies 3. Davos, Switzerland.**—*M.R.*

6B–191 551.509.312:016

†Kramer, Mollie P. and Rigby, Malcolm, **Annotated bibliography on numerical forecasting.** *Meteorological Abstracts and Bibliography*, Boston, 5(6):743–758, June **1954.** 121 refs. **MH-BH**—A fairly comprehensive list of 121 references to the literature on numerical forecasting published between 1922 and 1954. An outline indicates the variety of techniques employed in the preparation of the equations for machine forecasting as well as in the solution of these equations. The bibliography is annotated. *Subject Heading:* **1. Bibliography on numerical forecasting.**—*M.L.R.*

6B–192 551.5:551.46:016

†Kramer, Mollie P., **Selective annotated bibliography on general oceanographic meteorology.** *Meteorological Abstracts and Bibliography*, Boston, 5(1):75–123, Jan. **1954.** 251 refs. **MH-BH** – The material is arranged by date of imprint under the following headings: Textbooks and manuals, Expedition reports, Charts and atlases, Marine meteorology, Periodicals, and Bibliographies. An elaborate outline indicates meteorological elements treated, geographic areas covered and language of publications. The bibliography is annotated. *Subject Heading:* **1. Oceanographic meteorology bibliographies.**—*M.L.R.*

6B–193 551.556:551.465:016

†Kramer, Mollie P., **Selective annotated bibliography on wind waves and swell.** *Meteorological Abstracts and Bibliography*, Boston, 5(11):1300–1337, Nov. **1954.** 206 refs. **MH-BH**—Annotated references to a representative cross section of the vast literature on wind and waves with emphasis on ocean wave measurement, forecasting and physical characteristics, and theoretical relationships between wind and waves as evidenced in wave generation, development, propagation and decay. Various aspects of these and other specific subjects are indicated in the outline. *Subject Heading:* **1. Bibliography on wind waves and swell.**—*M.P.K.*

6B–194 551.508.71:016

†London. Science Museum. Science Library. **Hygrometers (1949–1953).** Its *Bibliographical Series*, No. 724. April 2, **1954.** 6 p. Mimeo. **DLC**—List of 132 references, chronologically arranged. No abstracts. *Subject Headings:* **1. Hygrometry bibliographies 2. Hygrometry.**—*C.E.P.B.*

6B–195 551.594.5:621.396 538.56 523.51

†Lovell, A. C. B. and others, **Radio astronomy.** *Royal Astronomical Society, Occasional Notes*, no. 16:32–79, April **1954.** plate, 33 figs., bibliog. **GB-MO**—This memoir consists of short accounts by the staff of Jodrell Bank of contemporary work in radio-astronomy. A. C. B. LOVELL gives a brief history and describes radio telescopes. Other sections are: I. C. BROWNE and J. S. GREENHOW on techniques; J. G. DAVIES, meteors; T. R. KAISER, echoes from the aurora and the moon; radio waves from the sun (R. D. DAVIES), from the Galaxy (R. HANBURY BROWN), from instellar hydrogen (C. G. LITTLE) and waves of extra-galactic origin (C. HAZARD). R. C. JENNISON discusses the identification and A. MAXWELL the scintillation of radio stars. The bibliography is in the form of a guide to reading. *Subject Headings:* **1. Auroral echoes 2. Meteors 3. Radio astronomy. I. Brown, R. Hanbury II. Browne, I. C. III. Davies, J. G. IV. Davies, R. D. V. Greenhow, J. S. VI. Hazard, C. VII. Jennison, R. C. VIII. Kaiser, T. R. IX. Maxwell, A.**—*C.E.P.B.*

6B–196 551.574.41:016

†*Masson, H., **La rosée et les possibilités de son utilisation.**" [Dew and possibilities of its use.] *Dakar. Institut des Hautes Études, L'École Supérieure des Sciences, Annales*, v. 1, **1954.** 44 p. figs., tables, 320 refs. Abstracted from reprint. **DWB**—This monograph constitutes a systematic review of the vast literature on dew and progress in constructing equipment for making economic use of dew in arid regions. The method of formation, time of appearance, thermodynamic control by dew, origin of water condensed, methods of measurement, data on diurnal and seasonal frequency in various regions, meteorological factors controlling dew formation (temperature, humidity, wind and clouds), effects of terrain, vegetation and trees, effectiveness of dew compared with rain, comparative amounts of dew and rain, natural and artificial dew ponds or collectors and, finally, a very complete and comprehensive but poorly organized list of over 300 references. Conclusion is that dew would rarely be formed in any quantity either naturally or artificially, unless there was already moisture enough for vegetation. *Subject Heading:* **1. Bibliography on dew.**—*M.R.*

6B–197 551.586:612

*†Matzke, H., **Die Abkühlungsgrösse unter spezieller Berücksichtigung der mit dem Davoser Frigorimeter in Greifswald erhaltenen Messergebnisse.** [Cooling power, with special reference to the measurements with the Davos frigorimeter at Greifswald.] *Germany. Deutsche Demokratische Republik. Meteorologischer und Hydrologischer Dienst, Abhandlungen*, 4(27), **1954.** 62 p. 24 figs., 8 tables, 221 refs., 41 eqs. **DWB**—In 1930–41 and 1948–52 measurements of cooling power were made, autographic since 1949, assuming a body temperature of 36.5°C. The history of cooling power is summarized with a comprehensive bibliography. The theory is discussed and a formula (1a, p. 13) developed in terms of heat loss by convection, conduction, radiation and evaporation, temperature difference body—air, sun, sky and ground radiation. Simplified formulas are (24) and (32). Instrumental setup and evaluation of records are described. Hourly observations are tabulated and used to discuss annual and diurnal variation, frequencies, extremes, effect of cloud, etc. Values are compared with those at Davos and Wahnsdorf. Effects of wind and of surroundings are examined. Various practical applications of cooling power measurements are described and several scales of sensible heat are evaluated in terms of cooling power (mcal/cm²/sec). *Subject Heading:* **1. Cooling power bibliographies.**—*C.E.P.B.*

6B–198 551.5:625.7:019.941

†National Research Council, Wash., D. C. Highway Research Board, Jan. 11–14, 1955, Washington, D. C., **Tentative program of the 34th annual meeting [and] Synopses of many of the papers and reports.** Its *Highway Research Abstracts*, 24(11), Dec. **1954.** 100 p. **DWB**—These abstracts cover all phases of highway research, including problems of frost heaving and its prevention, flood and rain erosion, snow removal, etc. A few articles of interest to applied meteorologists are found in each issue. Abstracts are long and informative. *Subject Headings:* **1. Highway Research Abstracts 2. Snow and permafrost research 3. Highway research bibliographies.**—*M.R.*

6B–199 551.593:016

†Optical Society of America, Philadelphia, **Journal,** 44(12), Dec. **1954.** Consists of 2 parts. **Pt. 1, Cumulative Index,** v. 1–40, 1917–1950. Alphabetical subject index. Index Editor, Mary E. Corning. Pt. 2, **Directory of the Society,** (as of Oct. 15, 1954). Alphabetical directory, and Geographic directory. Price: both parts, $3.00 from the American Institute of Physics, 57 East 55th Street, N. Y. 22. **DWB, DLC**—Material of meteorological interest is to be found under specific authors, e.g., Middleton, W. E. Knowles (13 items); under subjects, e.g., atmospheric optics (63 items); visibility or vision (about 550 items) and under Book Reviews, several score of items classified under sub-headings such as Vision, Spectra, Radiation, Luminescence, etc. *Subject Headings:* **1. Bibliography on atmospheric optics 2. Bibliography on visibility 3. Periodical indexes.**—*M.R.*

6B–200 551.582.1(54):016

†Reiner, Ernst, **Vorderindien, Ceylon, Tibet, Nepal, 1926–1953.** [Outer India, Ceylon, Tibet, Nepal, 1926–1953.] *Geographisches Jahrbuch*, Gotha, 61(1), **1954.** 186 p. **DLC**—On p. 76–81, 67 references to literature on climatology of the Middle East are cited and a 2 page running commentary on each item added. Hydrology, rainfall, and oceanography are treated in a similar manner on p. 73–75 (35 items). *Subject Headings:* **1. Climatology bibliographies 2. Middle East.**—*M.R.*

6B–201 551.513.2:551.557:016

§†Riehl, H.; Alaka, M. A.; Jordan, C. L. and Renard, R. J., **The jet stream.** Foreword by F. A. Berry. *Meteorological Monographs* (American Meteorological Society, Boston), 2(7), Aug. **1954.** 100 p. numerous figs. (incl. photos.), 153 refs. Ch. 1–7 were given limited distribution as *U. S. Office of Naval Operations, NAVAER Report*, 50-1R-249, June 1, 1953. **MH-BH, DWB**—Ap-

pended to the original U. S. Navy monograph on the Jet Stream is an alphabetically (by author) arranged bibliography of 115 items on the jet stream structure, climatology, relation to cyclones, forecasting, wind analysis and dynamic principles of its formation and maintenance. Appended to that is a chapter on jet stream research, 1952-54, covering briefly the above aspects, with 38 additional references. *Subject Headings:* **1. Jet stream bibliographies. I. Berry, Frederick A.**—*M.R.*

6B–202 551.510.52/3:016

†Rigby, Malcolm and Kramer, Mollie P., **Annotated bibliography on the tropopause.** *Meteorological Abstracts and Bibliography*, Boston, 5(4):498–548, April **1954.** 250 refs. **MH-BH**—A fairly exhaustive coverage of the literature on the tropopause from 1900 to 1954. Reference will be found, through the subject outline, to tropopause theory, physical characteristics of the tropopause, tropopause variations, tropopause relations or correlations, tropopause analysis, tropopause information as an aid to forecasting and tropopause data. An outline of geographic areas is also provided. The bibliography is annotated. Items are arranged chronologically. *Subject Heading:* **1. Bibliography on the tropopause.**—*M.L.R.*

6B–203 55:92:012

†Società Geografica Italiana, **Resoconto della manifestazione del 5 Aprile 1954 in onore di Giotto Dainelli [and] Bibliografia ragionata degli scritti di Giotto Dainelli.** [Account of the celebration of April 5, 1954 in honor of Giotto Dainelli [and] Chronological bibliography of his writings.] Its *Bollettino*, Ser. 8, 7:106–254, March/April **1954.** Bibliography contains 500 items. **DLC**—This issue is devoted to the celebration of the 70th birthday of PROF. G. DAINELLI, distinguished Italian geologist, geographer and explorer. The various orations delivered in his honor contain accounts of his contributions to geology, glaciology, paleontology, geography, etc. An annotated bibliography of G. DAINELLI's writings is included. *Subject Headings:* **1. Author bibliographies 2. Bibliography of Giotto Dainelli 3. Dainelli, Giotto 4. Biography.**—*I.L.D.*

6B–204 551.5:92:012

†Stenz, Edward, **Professor Dr. Władisław Gorczyński (obituary).** *Acta Geophysica Polonica*, Warsaw, 2(1):3–6, **1954.** Also: **List of publications by Władisław Gorczyński.** *Ibid.*, p. 6–18. **DLC**—A brief biography of the well-known Polish meteorologist is presented. It contains chronological information on his scientific activity during the whole life. His active part in meteorological research at home and abroad and in the organization of the Polish meteorological service are especially stressed. The main fields of his scientific activity have been solar radiation, methods of its observation, climatology and climatological meteorology. He had been a member of the American Meteorological Society since 1927. A list of 245 publications compiled by the author is added. *Subject Headings:* **1. Author bibliographies 2. Bibliography of Władisław Gorczyński 3. Biography 4. Gorczyński, Władisław.**—*A.M.P.*

6B–205 523.67:535.33:016

†Swings, P. and Haser, L., **Bibliography on cometary spectra for the period 1938–1953.** Liége. Univ. Institute of Astrophysics, Contract AF 61(514)-628 C., Technical Report, No. 1, **1954.** (8 p.) **MH-BH.** Continues bibliography of Bobrovnikoff, N. T., **Physical theory of comets in the light of spectroscopic data,** in *Reviews of Modern Physics*, 14:172–178, **1942.** 465 refs. **DLC**—Pt. I gives a list of 55 references to articles concerning spectroscopic observations of individual comets. Pt. II gives 29 papers on analysis of spectroscopic observations and laboratory investigations. References in Pt. I are rather sketchy. *Subject Heading:* **1. Comet spectra bibliographies.**—*M.R.*

6B–206 551.586:016

Thornthwaite, Charles W.; Mather, J. R.; Wellington, W. G. and others, **Recent studies in bioclimatology:** a group by C. W. Thornthwaite [and others]. Ed. by F. Sargent, II and R. G. Stone. With a preface by Jacques M. May. *Meteorological Monographs*, (American Meteorological Society, Boston), 2(8), Oct. **1954.** 121 p. figs., tables, and bibliogs. throughout. **DWB, MH-BH**—The majority of articles in this monograph consist of literature reviews on the specific phase of bioclimatology on which the author is an authority—with some added data and critical analysis (in many cases). The most important bibliographies are found in the article by THORNTHWAITE and MATHER on climate and crops (32 refs.); WELLINGTON on forest entomology (41 refs.); FINDLAY on farm animals (77 refs.); HERRINGTON on adaptation (28 refs.); MONGE M. on altitude effects on man (75 refs.); G. DUELL and B. DUELL on cosmic ray effects on organisms (40 refs.); SARGENT on metabolism and climate or season (90 refs.); LANDSBERG on bioclimatology of housing (97 refs.) and BUETTNER on thermal comfort as a criteria for climate classification (16 refs.). *Subject Headings:* **1. Bibliography on bioclimatology. I. Findlay, J. D. II. Herrington, L. P. III. Blum, H. F.**

IV. Monge M., C. V. Duell, G. VI. Duell, B. VII. Sargent, F., II VIII. Landsberg, Helmut IX. Buettner, K. X. Foulger, J. H. XI. Stone, Robert G. *(ed.)*.—*M.R.*

6B–207 55.510.41:016

†Thorp, Clark E. (*Armour Res. Found., Ill. Inst. of Tech.*), **Bibliography of ozone technology, v. 1, Analytical procedures and patent index.** Chic., Ill., Armour Research Foundation of Illinois Institute of Technology, **1954.** 209 p. **Bibliography of analytical procedures,** p. 39–101 (266 refs.); **Patent bibliography,** p. 115–187 (980 items). **DLC**—References are classified and deal with analysis of air for ozone, methods of ozonizing or of purifying air containing too much ozone, etc. Most of the references are applicable to industry. *Subject Heading:* **1. Ozone bibliographies.**—*M.R.*

6B–208 551.507.321:016

†Thuronyi, Geza T., **Annotated bibliography on balloons.** *Meteorological Abstracts and Bibliography*, Boston, 5(5):625–651, May **1954.** 153 refs. **MH-BH**—A fairly complete list of annotated references to literature describing meteorological balloons or discussion of their construction, material, operation and aerodynamic performance. The majority of the works cited were printed between 1900 and 1953. Specific subjects covered in the bibliography are indicated in an outline. *Subject Heading:* **1. Bibliography on balloons.**—*M.L.R.*

6B–209 551.510.53:016

†U. S. Air Weather Service, **Bibliography on small-scale time and space variations in the free atmosphere.** Its *Air Weather Service Bibliography*, No. 15, March **1954.** 5 p. 59 refs. (unannotated), alphabetical by author. **DWB**—A selected list of references to recent literature on micrometeorological (<3 hours or <50 miles) variations in temperature, humidity and wind in the free atmosphere—that is above the surface layers—for the benefit of those studying diffusion problems, representativeness of upper air observations or design of meteorological instruments or missiles for operation in the upper atmosphere. Papers on turbulence or vertical motions are, as a rule, omitted from this bibliography. *Subject Heading:* **1. Upper atmosphere variations bibliographies.**—*M.R.*

6B–210 551.509.33:016

†U. S. Air Weather Service, **Description of some methods of extended-period forecasting.** Its *Technical Report*, No. 105–93, March **1954.** 90 p. 43 figs., 8 tables, 108 refs. **DWB**—Four general methods of extended forecasting are reviewed: 1) statistical methods of WALKER, ABBOT, SCHELL, CLAYTON, WEICKMANN (symmetry point), BUCHAN (singularities), and based on polar ice; 2) typing methods of BAUR and KRICK; 3) analog methods of various authors including PAGAVA and MULTANOVSKIĬ; and 4) combined physical-empirical methods such as MITCHELL and NAMIAS used or are using. Each method is described and discussed critically and examples of charts, maps, etc. are presented. An extensive bibliography is included covering 108 works from BUCHAN (1869) to NAMIAS (1953). *Subject Headings:* **1. Extended forecasting bibliographies 2. Literature surveys.**—*M.R.*

6B–211 551.509.51:551.575.5:016

†U. S. Air Weather Service, **General aspects of fog and stratus forecasting.** Its *Air Weather Service Manual* 105-44, April **1954.** 99 p. 15 figs., 19 refs. Appendix: **Bibliography of synoptic and forecasting studies on fog and stratus with abstracts where available, mostly based on those in Meteorological Abstracts and Bibliography,** p. 54–99. **DWB**—After discussing the physical composition of fog and stratus, their formation and dissipation and the effect of air mass stability, the author reviews the factors affecting the formation and the synoptic situation of each type of fog and the use of objective techniques for forecasting the various types of fog from synoptic situations and local indications. Examples of forecasting techniques from studies made in Alaska and the United States are cited. Bibliographies on synoptic and forecasting studies, on fog and stratus, on California coastal stratus, on coastal stratus of the Western Atlantic, and fog and stratus in Europe and Africa are included. *Subject Headings:* **1. Fog forecasting 2. Stratus forecasting 3. Bibliography on fog and stratus forecasting.**—*I.L.D.*

6B–212 551.591:016:629.13

†U. S. Weather Bureau, **Final approach visibility studies.** Fiscal year 1952, Progress Report, Pt. 3. Prepared for the ANDB Project 4.14. Jan. **1954.** 92 p. 20 figs., 90 refs. **DWB**—This comprehensive study of problems affecting the observation of visibility on runways by means of television cameras, and report on actual tests conducted at Washington National Airport in the spring of 1952, contains a list of 90 references to technical literature on visibility and television or radar response to varying visibility conditions. *Subject Headings:* **1. Visibility bibliographies. I. U. S. Air Navigation Development Board II. Haynes, Benarthur C. III. Harrison, L. P.**—*M.R.*

6B–213 551.593.54:551.508.93(012):016

†Volz, Friedrich, **Die Optik und Meteorologie der atmosphärischen Trübung.** [Optics and meteorology of atmospheric turbidity.] *Germany. Deutscher Wetterdienst, Berichte,* 2(13), **1954.** 47 p. 31 figs., 10 tables, 86 refs. **DWB**—This excellent monograph contains a carefully prepared list of 86 references to literature on turbidity, extinction coefficients, scattering, particle size distribution and sky brightness measurements, haze, blue sun (Sept. 1950), visibility, twilight phenomena and other aspects of meteorological optics and spectrophotometry of the sky at high and low elevations. *Subject Headings:* **1. Turbidity bibliographies 2. Atmospheric optics bibliographies.** —*M.R.*

6B–214 551.574:016

†Weickmann, H.; Anderson, Charles E.; Benton, George S.; Braham, Roscoe R.; Hall, Ferguson and Junge, Christian, **Report of the Committee on Cloud Physics, 1951–1953.** *American Geophysical Union, Transactions,* 35(4):637–644, Aug. **1954. MH-BH**—Progress in cloud physics from 1951–53 is reviewed under the following general subject headings: (B) Nuclei, (C) Formation and properties of cloud particles, (D) Formation and properties of clouds, (E) Natural precipitation, (F) Artificial precipitation and cloud modification, (G) Thunderstorms, tornadoes, hailstorm and thunderstorm electricity. The many references cited in this report are given in detail in *Meteorological Abstracts,* v. 5, no. 7, p. 856–864, including, additionally, a section (A) On general works. (*Same item as* 6.1–12, Jan. 1955, *MAB.*) *Subject Headings:* **1. Cloud physics 2. Cloud physics bibliographies. I. American Geophysical Union. Committee on Cloud Physics.**—*M.R.*

6B–215 551.311.1(02) 551.583.3(02)

†Woldstedt, Paul, **Das Eiszeitalter. Grundlinien einer Geologie des Quartärs, Band 1.** [The ice age. Basis of a geology of the Quaternary, v. 1.] 2nd ed. Stuttgart, Ferdinand Enke, **1954.** 374 p. 136 figs., 4 tables, bibliog. p. 348–365. **GB-MO**—This book gives a comprehensive summary of present knowledge of the Quaternary Ice Age (largely based on recent German work). The first chapter is historical. Succeeding chapters deal with present-day glaciers and ice-sheets, periglacial and glacial formations and erosion; Chs. 8–10 turn to Pleistocene deposits and effects, loess and interglacial deposits. Ch. 11 deals with the course and duration of the Ice Age (author favors duration of 675,000 years.) The next chapters describe fauna and flora, human remains and cultures. In Ch. 15 the movements of the earth's crust and variations of sea level are discussed, glacial fluctuations being superposed on a general lowering since Tertiary. Ch. 16 gives a comprehensive summary of reconstructions of glacial climates. Finally, in Ch. 17 causes of ice ages are briefly discussed. An excellent bibliography is included. *Subject Headings:* **1. Glaciation 2. Glacial periods 3. Textbooks 4. Quaternary climate bibliographies.**—*C.E.P.B.*

6B–216 551.556.3:016

†World Meteorological Organization, **Energy from the wind. Assessment of suitable winds and sites.** Its *Technical Note,* No. 4, **1954;** *WMO,* No. 32, T.P. 10. 205 p. 14 figs., bibliog. p. 155–195. **1954. MH-BH**—This report contains a simple discussion of the general physical principles underlying the general circulation with special reference to wind flow, the nature of wind energy, calculation of mean scalar wind velocity, wind measurement, the application of wind energy potentials by the use of empirical and statistical techniques, vertical profile of wind speed, selection of suitable sites for installing wind turbines and the topographical effects of sites. An analysis of wind records and wind energy potentials with particular reference to arid and semi-arid regions of the world and tables containing details of stations for which wind records are available and the mean speed values are presented. The criteria for the selection of wind-power sites are discussed. In addition, extensive bibliographies dealing with wind energy and its utilization and special winds are included. (*Same item as* 5J–230, Oct. 1954, *MAB.*) *Subject Heading:* **1. Wind utilization bibliographies.**—*I.L.D.*

6B–217 551.574.7:629.13:016

†World Meteorological Organization, **Meteorological aspects of aircraft icing.** Its *Technical Note,* No. 3, **1954;** *WMO,* no. 30, T.P. 9. 18 p. 3 tables, fig., 33 refs. **DWB**—A review of the most important research on icing in clouds, taken from recent literature. Most of the work reported was done in the U. S. or Canada, though some results obtained in Great Britain, France, Germany and the U.S.S.R. are reported. The monograph contains 6 major chapters: a) meteorological parameters affecting aircraft icing; b) recent experimental research on liquid water content, cloud droplet size, temperature and extent of icing conditions; c) recent laboratory investigations; d) general cloud physics investigations; e) limitations of data and f) recommendations. *Subject Headings:* **1. Icing of aircraft 2. Icing in clouds 3. Icing bibliographies 4. Bibliography on icing.**—*M.R.*

SUPPLEMENTARY MATERIAL

6B–218 53(05):016

Journal de Physique et le Radium, Paris, v. 1, 1872– Latest issue seen, Ser. 8, 15(3), March 1954. Monthly. Issued by the Société Française de Physique. Title varies: 1872–1919 as **Journal de Physique Theorique et Appliquée.** In 1920, it absorbed **Le Radium,** Paris. Price: $12.00 annual, from no. 12, Place Henri-Bergson, Paris 8. **DLC.** Issues of the first volume, 1872, had section devoted to book reviews, and during the year began its **"Bulletin Bibliographique"** section, which constituted a listing of contents of pertinent journals. Vol. 9, 1880 contained Author Index to v. 1–9 (but not to the book reviews), a Table of Contents, and an Analytic Subject Index. Ser. 2, v. 9, 1890 maintained same format (also had the author index to v. 8–9). Ser. 6, v. 1, 1920, with new title and new format. Its Revue Bibliographique section had separate author and subject indexes. Section 10 of its systematic Table of Contents, entitled: **Physics of the Globe, Meteorology, and Astrophysics,** consisted of 1 full page. Ser. 6, v. 5, 1924, by contrast had 6 full pages and Ser. 7, v. 9, 1938 contains 250 references in meteorology. During the war years (1940–45), the format suffered some change, but later regained its former format, though meteorology section became restricted to material on Physics of the High Atmosphere. More extensive coverage of meteorology during these years is found in CNRS, **Bulletin Analytique** (*see* 6A–22, Jan. 1955, *MAB*). Also its: **Table analytique et Table par noms d'Auteurs, Ser. 1–3, 1872–1901.** Paris, pub. by the Journal, n.d. 182+159 p. Systematic Table of Contents, Part 7, **Meteorology and Cosmic Physics,** p. 170–181. Sec. 84, **Atmospheric Physics;** Sec. 85, **Meteorological Optics;** Sec. 86, **Terrestrial Magnetism and Atmospheric Electricity** contain several hundred references classified under a score of minor subject headings such as: Studies of the high atmosphere, Atmospheric composition, Instruments, Winds, Cyclones, Clouds, Actinometry, Thunderstorms, Auroras. This is the only systematic index of meteorological works during the period 1889–1900 [after the closing of the **U. S. Signal Corps Bibliography** (*see* 6A–1, Jan. 1955, *MAB*) and before the beginning of the **International Catalogue of Scientific Literature** (*see* 6A–2, Jan. 1955, *MAB*).] *Subject Headings:* **1. Physics abstracts 2. Bibliographies on atmospheric physics 3. Subject bibliographies. I. Société Française de Physique.**—*M.R.* and *D.M.G.*

6B–219 551.510.53:016

†Bartels, **J., Fizika vysokikh sloev atmosfery.** [Physics of the upper atmosphere.] *Uspekhi Fizicheskikh Nauk,* 13(5):689–751, **1933.** 42 figs., 2 tables, 150 refs. **DLC**—Brief summary of knowledge of stratospheric temperatures obtained from acoustical soundings. Excellent bibliography on upper air phenomena: aerology, twilight, light of night sky, meteors, ozone, sound, ionization, etc. (*Same item as* J–49, Oct. 1950, *MAB.*) *Subject Headings:* **1. Upper air analysis 2. Bibliography on upper atmosphere physics.**—*M.R., H.P.K.*

6B–220 551.555.8:016

†Koschmieder, Harald (*Lindenberg, Germany*), **Staubstürme und Staubwände.** [Dust storms and dust walls.] *Naturwissenschaften,* 27(8):113–122, Feb. 24, **1939.** 8 figs., 60 refs. **DWB**—Describes phenomena and formation of dust, dust storms, sand devils, dust clouds, dust smoke, dust fog and dust raising wind. Bibliography contains references to English, German and French literature for the period 1911–1939. *Subject Headings:* **1. Dust storm bibliographies 2. Dust storm phenomena.**—*M.A.S.*

6B–221 551.577:551.586:63:016

†*Hallgren, Gunnar, **Studies on the influence of precipitation on crop yields in Sweden with special reference to field irrigation.** *Uppsala. Lantsbrukshögskolans, Annaler,* 14:173 289, [**1947.**] 39 tables, 18 figs., bibliog. p. 280–289. **DLC**—An extensive study of the influence of temperature and precipitation on the yield of spring and winter cereals, potatoes, sugar beets, fodder roots and hay. The author discusses various semiempirical approaches to the relation between a growth factor and crop yield and chooses a second degree polynomial for a statistical study based on records for 9 selected farms over 25–53 years, taking the deviations of the yield from the general trend. The results show for most crops an optimum rainfall amount in the growing season, more and less rainfall causing reduction in yield. Irrigation is less effective (40–50%) than natural rainfall. The extensive bibliography lists studies made on weather and yield all over the world. *Subject Headings:* **1. Precipitation effects 2. Crop yield 3. Agricultural climatology bibliographies 4. Sweden.**—*A.A.*

6B–222 551.510.42:016

†Heimann, Harry; Brooks, H. Morton, Jr. and Schmidt, Donald G. (*all of Div. of Ind. Hygiene, U. S. Public Health Serv., Wash., D. C.*), **Biological aspects of air pollution: an annotated bibliography.** Wash., D. C., Div. of Industrial Hygiene, Public Health Service, April **1950.** unpaged. 321+refs. **DWB**—The items selected for this excellent bibliography are predominately those concerned with the

effects of atmospheric pollution upon living substances, of the action of individual pollutants and with the extent and problems of air pollution in specific localities. Relatively few items are concerned with the meteorological and physico-mathematical aspects of atmospheric pollution. *Subject Headings:* **1. Atmospheric pollution 2. Public health 3. Atmospheric pollution bibliographies.**—*I.L.D.*

6B–223 551.583:016:551.586

†Hustich, Ilmari (*ed.*), **Recent climatic fluctuation in Finland and its consequences: a symposium edited . . . for the Geographical Society of Finland.** *Fennia*, Helsinki, No. 75, 1952. 128 p. figs., plate (fold.), foot-refs., maps, bibliog. p. 118–128. **DWB**—A collection of 9 papers presented at two public lecture meetings by climatologists, forest scientists, geographers and biologists, illustrating the recent warming up in Finland and its effect on ice conditions, forest, crops, birds, mammals, insects and fishes. Additional discussions on the causes of climatic variations, the changes in sea salinity, fauna, tree growth, etc. can be found on p. 52–59 and 106–112. The editor discusses in his concluding remarks (p. 113–117) some world wide changes in temperature and pressure. An extensive bibliography, from Finnish sources, on recent climatic changes covers also their effects on human, plant and animal life. *Subject Headings:* **1. Ecoclimatology 2. Climatic change bibliographies 3. Symposia 4. Finland.**—*A.A.*

6B–224 551.579:06:016

†International Union of Geodesy and Geophysics. Association of Scientific Hydrology, Brussels, 1951. [**Transactions**]. *I.U.G.G. Association of Scientific Hydrology, Publications*, No. 32–35, 1952. 4 vol. illus., refs. throughout. In English and French. **DWB**—A symposium of hydrology giving a comprehensive insight into current research all over the world. Papers of interest for meteorologists are abstracted separately. Vol. I, pt. 1, **Partie generale et administrative** [General and administrative part] contains also a presidential address by M. V. Frolow on scientific aspects of hydrology and a list of national hydrological organizations. Vol. I, pt. 2, **Rapports sur l'activite** [Activity reports], 10 national reports, part of which contain valuable hydrometeorological data. Vol. I, pt. 3, **Rapports et comptes rendus des seances de la Commission des Neiges et Glaciers** [Reports and proceedings of the sessions of the Commission for Snow and Glaciers], 34 papers on glacier variations, snow classification, snow evaporation, arctic meteorology, runoff from melting snow, snow surveys and avalanches. Vol. II, pt. 1, **Rapports et comptes rendus des seances de la Commission d'Erosion du Sol** [. . . Commission for Soil Erosion], 20 papers, summarizing water and wind erosion surveys in different countries, climatic influences on erosion, etc. Vol. II, pt. 2, **Rapports et comptes rendus des seances de la Commission des Eaux Souterraines** [. . . Commission for Ground Waters], 29 papers on ground water fluctuations, safe yield, depletion curves during dry weather, geological problems, thermal springs, etc. Vol. III, **Rapports et comptes rendus des seances de la Commission des Eaux de Surface,** [. . . Commission for Surface Waters], contains 9 papers on the problematic measurement of precipitation, intense rainfall, rainfall statistics, etc.; 7 papers on river load; 1 paper on the standardization of hydrological characteristics; 16 papers on the effect of rainfall, vegetation, topography, soil, etc. on runoff, forecasting on runoff, retention and runoff variability; 3 papers on infiltration and surface runoff; 6 papers on limnology, 13 papers on evaporation from water and land surfaces, the water balance of catchment areas and evaporimeters; 5 papers on the water need for irrigation, presentation of hydrologic data, chemical composition of natural water, etc. Vol. IV, **Symposia sur les zones arides et les crues** [Symposia on arid ones and on floods], 8 papers on water balance, infiltration and ground water in arid zones and 17 papers on the movement of flood waves, flood statistics, intense rainfall, formulas for maximum runoff, floods from melting snow, etc. *Subject Headings:* **1. Hydrologic bibliographies 2. Snow research 3. Glaciology 4. Conferences 5. Symposia. I. Frolow, M. V.**—*A.A.*

6B–225 551.5:63:92:016

†Maksimov, S. A., **P. I. Brounov, osnovopolozhnik sel'skokhoziaĭstvennoĭ meteorologii.** [P. I. Brounov, founder of agricultural meteorology.] 2nd ed. Leningrad, Gidrometizdat., 1952. 53 p. 7 figs., 95 refs. (For 1950 edition, *see* 4.2 :20, Feb. 1953, *MAB.*) **DLC**—The life and major scientific works of P. I. Brounov are reviewed in this popular publication. Brounov published 95 works over a period of 50 years (1877–1928)—mainly in the fields of synoptic and agricultural meteorology. He is credited with the first isallobaric analysis (1878), some 30 years before the Swedish meteorologist Eckholm published his work on isallobars in forecasting. Brounov is also credited with organizing the world's first agro-meteorological service, for the Russian Empire, on Jan. 7, 1897. He was later active in international agro-meteorology work and in the development of instruments for agro-meteorological work. *Subject Headings:* **1. Agro-meteorological networks 2. Biography 3. Synoptic meteorology bibliographies 4. Agro-meteorological bibliographies 5. Bibliography of P. I. Brounov. I. Brounov, Petr Ivanovich.**—*M.R.*

6B–226 551.509.3:016(99)

Martin, A. R. (*Met. Bureau, Australia*), **Meteorology in the Antarctic.** (In: Simpson, Frank A., *ed.*, **The Antarctic today.** Wellington, Reed, 1952 p. 251–260.) **DWB**—A review of knowledge of synoptic analysis and conditions in the Southern Ocean and Antarctic, including mention of the most important literature, projects and efforts at improving forecasting or understanding of cyclones, anticyclones, frontal movements, air masses, etc. in that region—especially as applied to day-to-day analysis. Lack of stations (sparse networks) and the vast amount of ocean area compared to the small land areas are important considerations. *Subject Headings:* **1. Antarctic synoptic meteorology 2. Antarctic bibliographies 3. Antarctic Ocean area.**—*M.R.*

6B–227 551.583.3:551.481:016

†Deevey, Edward S., Jr. (*Yale Univ.*), **Paleolimnology and climate.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, 1953. p. 273–318, 9 figs., 4 tables, 176 refs.). **DLC**—The author presents a comprehensive review of the literature concerned with the evidence of former climate provided by geomorphologic studies of lakes and stratigraphic studies of their deposits. The review includes studies on the Wisconsin stratigraphy, band pollen analysis of peat bogs; the ontogeny of lakes, Linsley Pond, Conn. and Windermere, English Lake District, seasonal cycles as revealed by varves, evidence of Pleistocene climates in closed lakes and the relation between lakes and pre-Pleistocene climates. The review contains a very extensive bibliography. *Subject Headings:* **1. Climatic change bibliographies 2. Paleolimnology 3. Bogs.**—*I.L.D.*

6B–228 551.579:016

†Fernandez de Lara, Guillermo A. (*Mexico*), **Hydrology and utilization of hydraulic resources in the arid and semi-arid areas of Latin America.** (In: UNESCO, **Reviews of Research on Arid Zone Hydrology, 1953.** p. 153–178. map, refs.) **DWB**—The available literature on climate and hydrology is reviewed for each country separately, emphasizing the extent of arid and semi-arid zones, ground water conditions, rainfall, evaporation, runoff and irrigation projects. A map of hydrologic basins for Mexico is presented and the total amount of rainfall computed, from which only 12% runs off. The bibliography is divided by subject for each country, unfortunately omitting the author's own country, Mexico. *Subject Headings:* **1. Hydrologic bibliographies 2. Hydrologic cycle 3. Arid zones 4. Latin America.**—*A.A.*

6B–229 551.5:63:016

†Wageningen, Netherlands. Landbouwhoogeschool. Laboratorium voor Natur- en Weerkunde, [**List of publications of the Laboratory of Physics and Meteorology of the Agricultural University.**] Aug. 1953. [4 p.] Mimeog. **DWB**—Thirty papers published under sponsorship of the Laboratory of Physics and Meteorology, Agricultural University, Wageningen, are listed. The majority of the papers (written in Dutch or English) deal with soil physics and soil chemistry, a few are on climatological or microclimatological subjects. Most of the papers were published in Dutch agricultural, physical or chemical journals. *Subject Headings:* **1. Publication lists 2. Agrometeorological bibliographies.**—*G.T.*

6B–230 551.5:016

†I.U.G.G. Association of Meteorology, Rome, Sept. 14–25, 1954, **Rapports nationaux presentes a l'occasion de la Xe Assemblée Generale.** [National reports presented at the 10th General Assembly.] *I.U.G.G. Bulletin d'Information*, 3(6):207–295, July 1954. This report touches on the national reports from Germany, Australia, Belgium, Canada, Spain, Finland, France, Great Britain, Greece, India, Ireland, Japan, New Zealand and Pakistan. **DWB**—Most of these national reports discuss the major institutes carrying on meteorological research, and the various phases of meteorological research and publications, and present extensive bibliographies of work done in each major field in the period 1951–4, in the respective country. The reports from Australia (73 refs.), Belgium (83 refs.), Canada (109 refs.), Finland (47 refs.), India (90 refs.) and Japan (295 refs.) contain over 800 references in all. The other national reports contain few or no references, though some (Germany, Finland, France and Japan) list serials or periodicals containing pertinent literature. *Subject Headings:* **1. National progress reports in meteorology 2. National bibliographies of meteorological literature 3. Japan 4. Finland 5. Belgium 6. Spain 7. Canada 8. India 9. Australia.**—*M.R.*

6B–231 551.594:016

†Israël, H., **Der luftelektrische Vertikalstrom.** [The atmospheric electric air-earth current.] *Annales de Géophysique*, 10(2):93–116, April/June 1954. 12 figs., 3 tables, 65 refs., 14 eqs., French, German and English summaries p. 93. **DWB**—The atmospheric electric air-earth current has a particular importance in the correlations between factors and processes of atmospheric electricity and those of meteorology. There are few results available on the air-earth current, compared to those available on other atmospheric electric elements, but they gain more and more interest. In

compliance with that interest, this paper reviews the basic principles, measuring techniques and hitherto existing results. The following items are considered in particular: mean values and their distribution (non-polar continents, oceans and polar regions), daily and annual variations, meteorological influences, and considerations regarding future research. *Subject Headings:* **1. Atmospheric electricity bibliographies 2. Electric air-earth current.**—*Author's abstract.*

6B–232 551.5:016

†Linda Hall Library, Kansas City, Mo., **Meteorology and climate and related subjects. A list of books, periodicals and documentation in the Linda Hall Library.** Its *Bibliographic Bulletin*, No. 7, May 1954. 48 p. **MH-BH, DLC**—The list includes 483 entries from its catalog, arranged alphabetically under 3 sections: Bibliographies (including all the separate *MAB* special bibliographies through Vol. 4, No. 11, Nov. 1953 listed as item No. 1); Subject Areas of Meteorology and Climate (in 13 subsections); and Meteorological Observatories (their serials and monographs). An additional Section 4, p. 34–43, lists Periodicals and Serials alphabetically by title of institution in two sections: A. Current, and B. Non-current. The library has for a general science library a surprisingly complete collection of periodicals and observatory reports as well as books and monographs, both recent and old, and from every part of the world. Library of Congress class numbers are given where available. *Subject Headings:* **1. Meteorology bibliographies 2. Library catalogs 3. Subject bibliographies 4. Serial lists 5. Observatories. I. Meteorological Abstracts and Bibliography.**—*M.R.*

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The contents of periodicals included in this section are for information only and will not be listed in the monthly indexes until abstracted. When material is furnished in advance of date of publication, the pagination may be omitted.

Acta Geophysica Polonica, Warsaw, Volume 2, Number 1, 1954.

Stenz, Edward: **Professor Dr. Władysław Gorczyński** (Obituary), p. 1–18.
Kopcewicz, Teodor: **Méthode de prévision météorologique de 5 jours pour la Pologne,** [Method of 5-day meteorological forecasting for Poland], p. 19–54.

Volume 2, Number 2, 1954.

Chomicz, K.: **La prévision des crues de la fonte des neiges,** [Forecasting of floods from snow melting], p. 59–72.
Wielądek, R.: **Teoria błędow pomiarów grawimetrami statycznymi,** [Theory of measurements of errors made by means of static gravimeters], p. 73–96.
Stenz, E.: **Prof. Czesław Białobrzeski,** (Obituary), p. 105–106.
Stenz, E.: **Prof. Dr. Stefan Pieńkowski,** (Obituary), p. 107–108.
Zieliński, J. J.: **Inż. Stefan Lubiz-Sulimirski,** (Obituary), p. 109–111.

Volume 2, Number 3, 1954.

Kopcewicz, Teodor: **50-lecie pracy naukowej A. B. Dobrowolskiego,** [The 50th anniversary of A. B. Dobrowolski's scientific activity], p. 115–123.
Dębski, Kazimierz: **Épaisseur de la couverture de glace de rivières,** [Thickness of ice cover on rivers], p. 124–135.
Kosiba, Aleksander: **The snowfalls in Silesia,** p. 136–139.
Czyszek, Waclaw: **Der mittlere tägliche Gang des luftelektrischen Potential-gradienten an ungestörten Tagen in Swider,** [Average course of daily potential gradient of atmospheric electricity during calm days in Swider], p. 149–155.

Volume 2, Number 4, 1954.

Stenz, Edward: **Deep-well temperatures and geothermal gradient at Ciechocinek,** p. 159–168.
Kosiba, Aleksander: **Anomalies of the precipitation sums in Silesia,** p. 176–182.
Liana, Franciszek: **Insolaja Warszawy w r. 1936,** [Insolation in Warsaw in 1936], p. 183–187.

American Geophysical Union, Transactions, Volume 35, Number 6, Part I, December 1954.

Hess, Victor F. and Parkins, W. Dudley: **On the contribution of alpha rays from the ground to the total ionization of the lower atmosphere,** p. 869–871.
Wertheim, Gunther K.: **Studies of the Electric Potential between Key West, and Havana, Cuba,** p. 872–882.
Wiegel, R. L., Patrick, D. A. and Kiberley, H. L.: **Wave, longshore current, and beach profile records for Santa Margarita River,** p. 887–896.
Chien, Ning: **Ripple tank studies of wave refraction,** p. 897–904.
Gilbert, M. J. and van Bavel, C. H. M.: **A simple field installation for measuring maximum evapotranspiration,** p. 937–942.
Knopoff, L.: **Seismic wave velocities in Westerly Granite,** p. 969–973.
Appleman, Herbert S.: **A method for estimating the height of cirrostratus clouds,** p. 988–990.

American Meteorological Society, Bulletin, Volume 35, Number 10, December 1954.

Teweles, Sidney, Jr. and Wobus, Hermann B.: **Verification of prognostic charts,** p. 455–463.
Clodman, J.: **The interrelationship between wind-speed maxima, fronts and certain contour heights on isobaric surfaces,** p. 464–467.
Winston, Jay S.: **The annual course of zonal wind speed at 700 mb,** p. 468–471.
Solot, Samuel B. and Keegan, Thomas J : **An extension to 1,000,000 feet of the U.S.A.F. standard cold and hot atmospheres,** p. 472–475.

Muell, C. Eugene: **The relation between the temperature differences between the 700-mb an 500-mb levels and thunderstorm rainfall,** p. 476–477.

Lally, Vincent E.: **Use of anomalies in the design of a hydrostatic computer,** p. 478–480.

McIntyre, D. P.: **Rosters for shift workers,** p. 481–483.

Solot, Samuel B. and Marling, Eugene M., Jr.: **A note on the difference method of averagin** p. 484–488.

Program of the 135th National Meeting of the American Meteorological Society, January 24 27, 1955, at New York, New York, p. 488–496.

Annalen der Meteorologie, Hamburg, Volume 6, Number 5/6, 1953/1954.

Koenen, Magda: **Gibt es ein "Phänologisches Jahr"?** [Is there a "phenological year"?], 129–143.

Müller-Annen, Hans: **Langfristvorhersagen meteorologischer Elemente mit Hilfe von Aut korrelation und Buys-Ballot'schem Schema,** [Long-range forecasting of meteorologic elements with the aid of autocorrelation and the Buys-Ballot scheme], p. 144–150.

Goedecke, Erich: **Über den Zusammenhang zwischen Eis- und Kältesumme sowie Obe flächentemperatur in der Elbe- und Wessermündung während der Winter 1903–195** [On the connection between ice and cold sums and the surface temperature in the estuari of the Elbe and Weser during the winters 1903–1950], p. 151–163.

Lang, August: **Über neuere Untersuchungen an Hygrometerhaaren,** [Recent investigation on hygrometer hairs], p. 164–170.

Georgi, Johannes: **Saussure's Heliothermometer,** p. 171–178.

Schiess, Josef: **Über die Beseitigung eines grundsätzlichen Fehlers in der Psychromete theorie,** [The elimination of a systematic error in psychrometer theory], p. 179–185.

Becken, Friedrich Wilhelm: **Widerlegte Volkmeinung: Gewitter und Gezeiten,** [Refute popular belief: thunderstorm and tides], p. 185–187.

Wyrtki, Klaus: **Graphische Ermittlung des Gradienten eines ebenen skalaren Feldes und ihr Anwendung zur Bestimmung des Bodenwindes aus dem Luftdruck an drei Station** [Graphical calculation of the gradient of a uniform scalar field and its application to th determination of surface wind from pressure at three stations], p. 187–188.

Annales de Géophysique, Volume 10, Number 3, July/September 1954.

Lenoble, Jacqueline: **Contribution à l'étude du rayonnement ultraviolet solaire, de sa diffusio dans l'atmosphère et de sa pénétration dans la mer (2me et 3me parties),** [Contributio to the study of ultraviolet solar radiation, its atmospheric diffusion and its penetratio into the sea (Pt. 2 and 3), p. 187–225.

Roquet, J.: **Sur les rémanences des oxydes de fer et leur intérêt en géomagnétisme (1re partie** [Residues of iron oxides and their importance to geomagnetism (Pt. 1)], p. 226 247.

Penndorf, R.: **Remarks on the note by R. Grandmontagne,** p. 248.

Argence, E.: **Détermination des trajectoires d'énergie d'une onde se propageant dans l'iono sphère. Étude de deux cas particuliers (milieu transparent),** [Determination of tra jectories of energy waves propagated into the ionosphere. Study of two particular cases (i transparent media)], p. 249–253.

Mayaud, P.-N. and Robley, R.: **L'émission crépusculaire du sodium dans l'hémisphère austra** [Twilight emission of sodium in the Southern Hemisphere], p. 258–261.

Kunetz, G.: **Enregistrements des courants telluriques à l'occasion de l'éclipse de soleil du 2 février 1952,** [Recording of telluric currents during solar eclipse on February 25, 1952] p. 262–270.

Arkiv för Geofysik, Stockholm, Volume 2, Number 5, 1954.

Norinder, Harald and Pucher, Walter: **Field intensities and charge densities in thunderclouds** p. 97–107.

Volume 2, Number 6, 1954.

Norinder, H.; Israël, H. and Siksna, R.: **Das luftelektrische Potentialgefälle und der Verti kalstrom in Uppsala,** [Electrical potential gradient and the vertical current in Uppsala] p. 109–138.

Volume 2, Number 7, 1954.

Melin, Ragnar: **Run-off in Sarek,** p. 139–149.

Volume 2, Number 8, 1954.

Lönnqvist, Olov: **Theoretical verification of the logarithmic formula for the relative net radiation to a cloudless sky,** p. 151–159.

Volume 2, Number 9, 1954.

Norinder, Harald: **The wave-forms of the electric field in atmospherics recorded simultaneously by two distant stations,** p. 161–195.

Australian Meteorological Magazine, Melbourne, Number 7, November 1954. (Numbers 1–6 out of print and no longer available to requesters. This Journal is the successor to Weather Development and Research Bulletin, issued by the Australian Meteorological Branch, the Bulletin having ceased publication with no 17, Aug. 1951.)

Radok, U.: **A comparison of geostrophic and observed upper winds,** p. 1–6.
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